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Unpublished observations of pulsating stars*

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Abstract

Unpublished photoelectric data of pulsating variable stars obtained in Hungary between 1980 and 2014 are presented here. Besides the data of the mainly investigated δ Scuti stars, many other types of pulsating stars are included (Be, λ Boo, β Cep, RR Lyr, WD, γ Dor and W UMa). Observations obtained in the frame of international cooperations, both with Hungarian or foreign leadership, are also shown. The long timebase is essential for variable star research besides the continuous but short timespan measurements of space missions (MOST, CoRoT, Kepler, TESS). The main aim of this publication is to preserve the unpublished old data. Some of our collaborators did not publish the data, some lost it in computer crash. Due to our proper preservation over consecutive technical recordings, we included their data (with permission) in this publication. Johnson *UBVRI* colours were used in Hungary, however, Strömgren *ubvy* colours with *b-y*, *m*₁ and *c*₁ indeces are given in the case of non-Hungarian contributions. The online paper contains the light curves not only for the variable stars but the comparisons and check stars, showing the quality of observatons. Besides the table of this online paper, the data will also be uploaded to the VizieR archive in a machine-readable format.

Key words: Stars – variable: δ Scuti; stars – individual: 57 Tau, 78 θ^2 Tau, θ Tuc FM Com, VW Ari, DL Dra, KW 385, KW 445, KW 323, KW 207, 4 CVn, ϵ Cep, CoRoT 10274568 – variable: Be; stars – individual: 25 Cyg, ψ and ζ Tau – variable: β Cep; stars – individual: ν and μ Eri – variable: RR Lyr; stars – individual: TV Boo, AC And – variable: γ Dor; stars – individual: 8 Dra, HD 108100 – variable: white dwarf; stars – individual: GD 154 – variable: W UMa; stars – individual: DK Cyg – Techniques: photoelectric Johnson *UBVRI*, Strömgren *ubvy* colours – Techniques: light curves

INTRODUCTION

I started the observations of δ Scuti stars in 1980 at Konkoly Observatory of Hungary. 78 Tau was the first project together with Géza Kovács. In the following years I collected data on more targets from season to season as Géza Kovács continued his scientific work in the modelling of RR Lyrae stars in United States. However, it soon became obvious that due to the dense frequency spectrum of δ Scuti stars more continuous data distributions are needed for resolving the fine stucture of the dense frequency spectrum of low-amplitude. Over the years different approaches were used to carry out successful investigations for Konkoly Observatory. In these years many international campaigns were organized by Michel Breger for δ Scuti stars (DSN - δ Scuti network) and the French STEPHI project by Eric Michel. I joined many campaigns in both groups (4 CVn (Breger et al. 1999), EP Cnc (Breger et al. 1994), BU Cnc (Breger et al. 1993), HR 729 (Ostermann et al. 1991) 78 Tau (Breger et al. 1989) and BS-BT Cnc (Hernández et al. 1998)). The right of data handling and analyses belonged to the organizer of the campaign.

Due to my high interest in independent analyses, as a second approach, I started to organize smaller-size, but multi-site campaigns with Chines (Jiang She-yang, Li Zhi-ping), Mexican (Jose Peña, Rosario Peniche, Gonzales-Bedolla), and Spanish (Eloy Rodríguez, Angel Rolland, Pilar Lópe de Coca) groups. The cooperation resulting papers on some δ Scuti stars, but the weather conditions were not the best and not enough nights were

allocated for the coordinated observations. The resulting papers are on FM Com, 57 Tau and VW Ari.

The next level of the approach was the organization of larger-size/longer campaigns on three continents and the best astronomical conditions (South-Africa, Chile and Australia). The targets were θ Tuc and 38 Eri on the southern hemisphere. I observed in both cases at SAAO in South-Africa. Papers were published on both targets, but the data was submitted to the archive only for 38 Eri.

As a final level I joined the CoRoT space mission to get accessibility to the space data of pulsating stars. The CoRoT 10274568 target was discovered at Konkoly Observatory by József Benkő in a survey of CoRoT fields. Dedicated Hungarian observations on the newly discovered δ Scuti star were obtained by Zsófia Bognár.

The status of the data are different. Although the results of the investigations for many objects have been published in the main international astronomical journals, even the data for many of these stars had not been submitted into data archive. Data archiving processes were not as automatic in the early years as nowadays. The right of data was kept by the observer for a possible subsequent analyses, for example for stability investigation, since at that time huge efforts were needed to collect data. In terms of variability of pulsation on longer time scale due to internal changes in the stellar structure or stability investigation on a shorter time scale, the archiving of the old data is important despite the huge time series measurements of the space telescopes (MOST, CoRoT, Kepler, TESS). Although space-born data have much better quality than the ground-based data, the time-base is not as long as would be ideal for stability investigation. For any variable phenomenon, like pulsation in the stars, the knowledge at each moment of time gives extra information in the future evolution.

Over the years I joined international campaigns for other types of pulsating stars, too. In addition to δ Scuti stars, the whole set of the mean sequence of the Hertzsprung-Russell diagram (β Cep, Be and γ Dor) were covered by these campaigns. I observed evolutionally older types of pulsating stars, RR Lyr and WD stars. The unpublished photoelectric measurements obtained between 1980 to 2014 are published in the online paper. Beside the tables in this online paper, the data will also be uploaded to the VizieR archive in a machine-readable format.

DATA OF δ SCUTI STARS

The δ Scuti stars show low-amplitude non-radial pulsation, so the proper signal/noise level is rather important. Due to the generally used small size telescopes, both in Hungary and in the countries that joined the multi-site campaigns, all of the observed star were bright to obtain good enough precision. To decrease the effect of the atmosphere, differential photometry was carried out, namely the star's light was compared to a comparison star. When the previous observations proved that the comparison star has stable light, then only one comparison was used. In many cases a second comparison, a check star was also observed to confirm the constancy of the comparisons. Each star (target, comparison and check star) were observed in each cycle, to reach higher precision. This method was named as three-stars technique by Michel Breger.

In line with the purpose of this publication detailed analyses of the individual stars is not given, only the data are concentrated on. The dates and the circumstances of the

observations (comparisons, filters) are given. I present only the graphical representation of the light curve to give the impression on the quality of observations.

78 θ^2 Tau

The light variability of the spectroscopic binary 78 θ^2 Tau (=HR 1412=HD 28319) was discovered in 1977 and later was classified as a δ Scuti star. Variable stars in clusters, like Hyades, are extremely valuable, since general parameters can be more precisely determined. It is not surprising that independent investigations were started by different groups.

Table 1. Journal of all the Hungarian observations obtained between 1980-1986

Date (UT)	HJD 2400000+	Length day	Obs.	Filter	Nightly mean mag
Jan.4/5 1980	44243	0.238	23	UBV	-1.3702
Jan.19/20 1980	44258	short		UBV	
Jan.14/15 1981	44619	0.155	17	UBV	-1.3694
Febr.16/17 1982	45017	0.107	47	V	-1.3708
Febr.17/18 1982	45018	0.080	36	V	-1.3727
Dec.13/14 1982	45317	0.170	78	V	-1.3730
Dec.14/15 1982	45318	0.279	97	V	-1.3707
Jan.12/13 1983	45347	0.097	39	V	-1.3730
Nov.8/9 1983	45647	0.026	10	V	
Nov.9/10 1983	45648	0.340	123	V	-1.3708
Nov.10/11 1983	45649	0.106	39	V	-1.3716
Nov.12/13 1983	45651	0.076	28	V	
Nov.14/15 1983	45653	0.323	119	V	-1.3699
Dec.1/2 1983	45670	0.215	80	V	-1.3712
Dec.8/9 1983	45677	0.082	30	V	-1.3691
Dec.11/12 1983	45680	0.163	57	V	-1.3713
Dec.12/13 1983	45681	0.294	138	V	-1.3727
Dec.14.15 1983	45683	0.322	156	V	-1.3730
Jan.6/7 1984	45706	0.130	56	V	-1.3712
Jan.23/24 1984	45723	0.059	23	V	-1.3702
Febr.6/7 1984	45737	0.089	41	V	-1.3745
Okt.16/17 1985	46355	0.163	42	V	-1.3713
Okt.17/18 1985	46356	0.219	58	V	-1.1733
Okt.20/21 1985	46359	0.218	54	V	-1.3727
Nov.11/12 1986	46746	0.094	35	V	
Nov.12/13 1986	46747	0.362	142	V	
Nov.13/14 1986	46748	0.235	92	V	

On the one hand, 78 θ^2 Tau was regularly observed at Konkoly Observatory between 1980-1986 from season to season by Géza Kovács and myself. On the other hand, Michel Breger organized two international campaigns, the first one between 1982 and 1984 (Breger

et al. 1987) and a second one in 1986 (Breger et al, 1989). For increasing the sampling on longer timebase and getting a finer frequency spectrum, the overlapping time span made the Hungarian observations so valuable that all the Hungarian data were included in the analyses of paper by Breger et al. (1989) and in the independently published paper by Kovács and Paparó (1989). The situation became more complex since I joined the second international campaign of Michel Breger. So, there are two types of Hungarian datasets. The Hungarian observations were not published, these were only reachable by personal request. Now we let them to be available for the astronomical community. The campaign data were published in the journal but we decided to keep all the Hungarian observations together in one place. Despite the published format of the Hungarian campaign data, we kept the observed format (not averaged). The journal of all Hungarian observations between 1980-1986 is given in Table 1.

As Table 1 shows, most of the observations were obtained in Johnson *V* filters, except the early observations in 1980 and 1981, where Johnson *UBV* filters were used. The last three lines represent the Hungarian contribution to Breger's international campaign. The detailed description of the data reduction were given in the Kovács and Paparó (1989) paper. The nightly mean values were determined, if the observation was long enough, and used in the analyses to shift the observations to a common zero point. The observations on nights JD 45647, 45648, 45649, 45651 and 45653 were obtained by Géza Kovács, with the 1m telescope, while data on night JD 45670 was collected by Imre Tóth. The data on the other nights were collected by myself on the 50cm telescope.

The comparison stars were different in the two data sets. In the independent observation HR 1427 was applied as comparison, but in the campaign data two comparisons, c1=HR 1422 and c2=HR1428, were used. To have a homogeneous Hungarian dataset, the campaign data were transformed to HR 1427 comparison star using the magnitude difference between the different comparison stars.

Altogether 1660 measurements were carried out for 78 θ^2 Tau over 111 hours between 1980 and 1986. The relative brightness of 78 θ^2 Tau to HR 1427 in *V* colour is given in Table 2. The data are arranged in columns, as a standard format of this publication. One column contains the JD fraction and the differential brightness. The data are given from column to column (5/page) and from page to page. The data set of each night starts with the JD integer of the actual night. This format is used for all tables of this publication.

Table 2. Johnson *V* observations of 78 θ^2 Tau obtained at Konkoly Observatory between 1980 - 1986 to HR 1427 as a comparison star.

78 Tau-HR	.3428 -1.3671	.4489 -1.3778	.3048 -1.3760	.3052 -1.3709
1427	.3529 -1.3720	.4599 -1.3737	.3175 -1.3661	.3144 -1.3685
2444243 +	.3635 -1.3893	.4721 -1.3613	.3278 -1.3784	.3241 -1.3739
.2677 -1.3615	.3732 -1.3811	.4838 -1.3657	.3380 -1.3766	.3337 -1.3764
.2786 -1.3821	.3841 -1.3683	.4953 -1.3649	.3497 -1.3521	.3442 -1.3696
.2896 -1.3866	.3949 -1.3641	.5060 -1.3629	.3602 -1.3583	.3537 -1.3712
.3015 -1.3751	.4060 -1.3541	2444258 +	.3707 -1.3485	.3633 -1.3675
.3122 -1.3594	.4162 -1.3699	.2740 -1.3759	2444619 +	.3724 -1.3636
.3228 -1.3583	.4275 -1.3785	.2838 -1.3626	.2853 -1.3809	.3820 -1.3647
.3328 -1.3611	.4383 -1.3843	.2942 -1.3550	.2948 -1.3736	.3911 -1.3744

.4010 -1.3688	.3562 -1.3665	.3354 -1.3740	.4610 -1.3740	.2752 -1.3627
.4108 -1.3651	.3585 -1.3693	.3383 -1.3759	.4630 -1.3779	.2777 -1.3689
.4212 -1.3594	.3606 -1.3715	.3404 -1.3744	.4651 -1.3793	.2942 -1.3684
.4306 -1.3654	.3628 -1.3775	.3425 -1.3744	.4674 -1.3792	.2965 -1.3690
.4401 -1.3641	.3649 -1.3706	2445317 +	.4695 -1.3760	.2989 -1.3732
2445017 +	.3671 -1.3802	.3690 -1.3724	.4716 -1.3770	.3027 -1.3767
.2599 -1.3624	.3691 -1.3820	.3711 -1.3736	.4736 -1.3772	.3049 -1.3801
.2621 -1.3696	.3714 -1.3811	.3732 -1.3754	.4757 -1.3748	.3072 -1.3754
.2642 -1.3650	.3735 -1.3778	.3753 -1.3754	.4778 -1.3788	.3094 -1.3777
.2663 -1.3614	.3757 -1.3765	.3774 -1.3753	.4799 -1.3772	.3117 -1.3764
.2685 -1.3583	.3780 -1.3864	.3796 -1.3766	.4821 -1.3759	.3140 -1.3757
.2706 -1.3693	.3800 -1.3858	.3818 -1.3769	.4843 -1.3671	.3164 -1.3764
.2730 -1.3650	.3822 -1.3848	.3839 -1.3782	.4864 -1.3715	.3189 -1.3769
.2751 -1.3590	.3845 -1.3807	.3861 -1.3786	.4884 -1.3747	.3214 -1.3750
.2773 -1.3673	2445018 +	.3883 -1.3753	.4905 -1.3714	.3238 -1.3715
.2795 -1.3676	.2621 -1.3712	.3907 -1.3738	.4926 -1.3732	.3263 -1.3724
.2827 -1.3687	.2643 -1.3760	.3930 -1.3763	.4947 -1.3735	.3285 -1.3725
.2855 -1.3668	.2667 -1.3753	.3952 -1.3782	.4969 -1.3743	.3308 -1.3676
.2876 -1.3688	.2690 -1.3755	.3973 -1.3753	.4990 -1.3686	.3419 -1.3655
.2897 -1.3710	.2712 -1.3760	.3995 -1.3730	.5011 -1.3699	.3442 -1.3652
.2919 -1.3750	.2733 -1.3760	.4015 -1.3716	.5032 -1.3685	.3466 -1.3641
.2942 -1.3765	.2755 -1.3809	.4040 -1.3740	.5053 -1.3673	.3488 -1.3628
.2963 -1.3772	.2776 -1.3758	.4063 -1.3722	.5076 -1.3673	.3510 -1.3606
.2985 -1.3764	.2800 -1.3792	.4085 -1.3730	.5097 -1.3672	.3533 -1.3635
.3006 -1.3801	.2822 -1.3788	.4107 -1.3742	.5118 -1.3706	.3556 -1.3652
.3027 -1.3777	.2846 -1.3785	.4130 -1.3694	.5147 -1.3704	.3581 -1.3678
.3071 -1.3723	.2868 -1.3796	.4156 -1.3755	.5168 -1.3678	.3607 -1.3693
.3093 -1.3839	.2890 -1.3782	.4177 -1.3713	.5192 -1.3689	.3629 -1.3681
.3114 -1.3805	.2912 -1.3797	.4200 -1.3679	.5219 -1.3734	.3652 -1.3740
.3137 -1.3758	.2934 -1.3766	.4223 -1.3684	.5239 -1.3698	.3675 -1.3746
.3160 -1.3756	.2955 -1.3759	.4243 -1.3684	.5261 -1.3723	.3698 -1.3749
.3185 -1.3667	.2977 -1.3772	.4264 -1.3668	.5283 -1.3742	.3721 -1.3777
.3208 -1.3744	.2999 -1.3757	.4286 -1.3652	.5306 -1.3776	.3744 -1.3752
.3233 -1.3742	.3022 -1.3693	.4308 -1.3682	.5327 -1.3752	.3766 -1.3787
.3255 -1.3696	.3044 -1.3704	.4329 -1.3666	.5349 -1.3748	.3789 -1.3781
.3279 -1.3651	.3067 -1.3707	.4351 -1.3680	.5370 -1.3804	.3810 -1.3779
.3316 -1.3676	.3107 -1.3681	.4371 -1.3700	.5392 -1.3818	.3833 -1.3794
.3340 -1.3644	.3130 -1.3644	.4393 -1.3699	2445318 +	.3857 -1.3764
.3362 -1.3590	.3151 -1.3635	.4414 -1.3702	.2514 -1.3701	.4023 -1.3727
.3383 -1.3582	.3174 -1.3647	.4436 -1.3693	.2542 -1.3699	.4045 -1.3653
.3406 -1.3623	.3198 -1.3599	.4457 -1.3755	.2568 -1.3699	.4068 -1.3682
.3428 -1.3606	.3220 -1.3663	.4480 -1.3751	.2595 -1.3693	.4090 -1.3659
.3452 -1.3629	.3243 -1.3619	.4501 -1.3749	.2619 -1.3686	.4113 -1.3662
.3473 -1.3583	.3266 -1.3675	.4522 -1.3745	.2644 -1.3689	.4135 -1.3566
.3495 -1.3632	.3287 -1.3693	.4545 -1.3737	.2671 -1.3686	.4158 -1.3585
.3516 -1.3648	.3310 -1.3736	.4566 -1.3724	.2693 -1.3646	.4185 -1.3619
.3538 -1.3681	.3332 -1.3710	.4588 -1.3770	.2717 -1.3680	.4231 -1.3617

.4267 -1.3656	.5450 -1.3791	.3081 -1.3740	.3730 -1.3625	.5023 -1.3636
.4300 -1.3633	.5485 -1.3693	.3102 -1.3786	.3761 -1.3608	.5048 -1.3611
.4322 -1.3639	.5512 -1.3722	.3124 -1.3830	.3786 -1.3621	.5075 -1.3582
.4345 -1.3649	.5537 -1.3641	.3150 -1.3889	.3815 -1.3635	.5102 -1.3535
.4369 -1.3705	.5562 -1.3552	.3171 -1.3867	.3841 -1.3671	.5145 -1.3545
.4396 -1.3721	.5587 -1.3542	.3194 -1.3829	.3867 -1.3711	.5170 -1.3564
.4422 -1.3715	.5611 -1.3560	.3284 -1.3794	.3891 -1.3703	.5195 -1.3570
.4445 -1.3697	.5635 -1.3579	.3311 -1.3832	.3918 -1.3785	.5222 -1.3569
.4470 -1.3755	.5658 -1.3587	.3336 -1.3777	.3943 -1.3832	.5248 -1.3587
.4493 -1.3778	.5683 -1.3573	.3358 -1.3770	.3967 -1.3815	.5274 -1.3625
.4515 -1.3810	.5710 -1.3517	.3380 -1.3723	.3992 -1.3790	.5301 -1.3649
.4538 -1.3794	.5735 -1.3519	.3404 -1.3799	.4033 -1.3820	.5326 -1.3677
.4562 -1.3786	.5759 -1.3528	.3426 -1.3605	.4058 -1.3837	.5350 -1.3697
.4585 -1.3848	2445347 +	.3450 -1.3640	.4088 -1.3855	.5378 -1.3802
.4609 -1.3834	.2288 -1.3645	.3483 -1.3732	.4112 -1.3832	.5408 -1.3821
.4633 -1.3838	.2312 -1.3757	.3507 -1.3672	.4137 -1.3803	.5434 -1.3870
.4656 -1.3764	.2335 -1.3857	2445647 +	.4163 -1.3757	.5461 -1.3852
.4679 -1.3767	.2359 -1.3823	.4385 -1.3693	.4187 -1.3772	.5487 -1.3845
.4703 -1.3881	.2381 -1.3855	.4416 -1.3670	.4213 -1.3738	.5513 -1.3886
.4728 -1.3748	.2404 -1.3745	.4444 -1.3696	.4238 -1.3699	.5547 -1.3855
.4762 -1.3748	.2432 -1.3898	.4472 -1.3738	.4263 -1.3667	.5575 -1.3818
.4785 -1.3711	.2453 -1.3892	.4504 -1.3703	.4294 -1.3670	.5602 -1.3810
.4810 -1.3653	.2475 -1.3830	.4531 -1.3678	.4324 -1.3589	.5628 -1.3799
.4834 -1.3621	.2498 -1.3862	.4558 -1.3678	.4349 -1.3604	.5656 -1.3764
.4865 -1.3638	.2520 -1.3808	.4588 -1.3751	.4375 -1.3615	.5717 -1.3708
.4894 -1.3612	.2564 -1.3804	.4615 -1.3716	.4401 -1.3619	.5741 -1.3624
.4918 -1.3595	.2586 -1.3751	.4641 -1.3698	.4429 -1.3561	.5768 -1.3663
.4942 -1.3603	.2608 -1.3754	2445648 +	.4456 -1.3654	.5793 -1.3586
.4968 -1.3626	.2633 -1.3738	.3184 -1.3761	.4484 -1.3641	.5820 -1.3553
.4994 -1.3595	.2656 -1.3681	.3219 -1.3816	.4511 -1.3576	.5849 -1.3561
.5019 -1.3606	.2679 -1.3702	.3255 -1.3701	.4538 -1.3638	.5875 -1.3529
.5044 -1.3591	.2701 -1.3689	.3283 -1.3852	.4588 -1.3681	.5903 -1.3551
.5068 -1.3623	.2722 -1.3703	.3310 -1.3825	.4613 -1.3706	.5928 -1.3569
.5106 -1.3659	.2743 -1.3639	.3336 -1.3850	.4637 -1.3778	.5957 -1.3548
.5130 -1.3686	.2765 -1.3616	.3364 -1.3803	.4665 -1.3819	.5994 -1.3593
.5154 -1.3716	.2798 -1.3639	.3392 -1.3791	.4691 -1.3819	.6021 -1.3673
.5179 -1.3663	.2820 -1.3628	.3418 -1.3721	.4718 -1.3811	.6047 -1.3690
.5204 -1.3733	.2842 -1.3650	.3444 -1.3742	.4745 -1.3894	.6074 -1.3757
.5228 -1.3729	.2864 -1.3552	.3492 -1.3721	.4771 -1.3836	.6098 -1.3774
.5252 -1.3778	.2890 -1.3618	.3519 -1.3670	.4798 -1.3858	.6123 -1.3810
.5277 -1.3799	.2913 -1.3629	.3543 -1.3660	.4827 -1.3851	.6149 -1.3860
.5302 -1.3796	.2935 -1.3633	.3570 -1.3657	.4861 -1.3824	.6176 -1.3843
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.5400 -1.3704	.3039 -1.3755	.3678 -1.3535	.4971 -1.3693	.6288 -1.3862
.5425 -1.3738	.3060 -1.3779	.3704 -1.3586	.4997 -1.3655	.6314 -1.3856

.6344 -1.3826	.4205 -1.3652	.3569 -1.3705	.4826 -1.3586	.6128 -1.3802
.6370 -1.3781	.4232 -1.3676	.3595 -1.3682	.4850 -1.3571	.6156 -1.3755
.6398 -1.3723	.4259 -1.3663	.3621 -1.3712	.4895 -1.3555	.6180 -1.3711
.6425 -1.3688	.4285 -1.3704	.3654 -1.3811	.4921 -1.3562	.6206 -1.3687
.6451 -1.3672	.4311 -1.3760	.3679 -1.3825	.4946 -1.3551	.6231 -1.3649
.6478 -1.3638	.4335 -1.3688	.3705 -1.3864	.4977 -1.3587	.6263 -1.3639
.6507 -1.3576	2445651 +	.3729 -1.3861	.5004 -1.3602	.6287 -1.3608
.6537 -1.3562	.2996 -1.3628	.3754 -1.3910	.5028 -1.3601	.6313 -1.3597
.6565 -1.3519	.3021 -1.3633	.3780 -1.3881	.5052 -1.3645	.6338 -1.3549
.6593 -1.3495	.3049 -1.3553	.3817 -1.3917	.5078 -1.3706	.6366 -1.3537
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.6655 -1.3556	.3104 -1.3670	.3867 -1.3825	.5127 -1.3745	.6421 -1.3584
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2445649 +	.3160 -1.3723	.3922 -1.3793	.5181 -1.3796	.6477 -1.3512
.3277 -1.3589	.3186 -1.3701	.3948 -1.3680	.5206 -1.3829	.6502 -1.3584
.3304 -1.3586	.3213 -1.3667	.3974 -1.3736	.5230 -1.3869	.6542 -1.3643
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.3359 -1.3574	.3289 -1.3691	.4023 -1.3621	.5280 -1.3834	.6593 -1.3662
.3386 -1.3571	.3313 -1.3780	.4049 -1.3566	.5306 -1.3848	.6620 -1.3723
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.3489 -1.3582	.3423 -1.3873	.4154 -1.3603	.5437 -1.3741	.6725 -1.3794
.3515 -1.3695	.3449 -1.3876	.4181 -1.3583	.5464 -1.3694	.6751 -1.3736
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.3588 -1.3828	.3502 -1.3749	.4231 -1.3585	.5520 -1.3647	2445670 +
.3615 -1.3795	.3528 -1.3818	.4256 -1.3588	.5545 -1.3614	.3816 -1.3881
.3642 -1.3806	.3566 -1.3782	.4282 -1.3631	.5570 -1.3572	.3854 -1.3771
.3673 -1.3866	.3592 -1.3819	.4307 -1.3631	.5595 -1.3585	.3887 -1.3747
.3700 -1.3835	.3618 -1.3672	.4339 -1.3730	.5621 -1.3555	.3914 -1.3784
.3725 -1.3860	.3643 -1.3700	.4363 -1.3732	.5646 -1.3528	.3943 -1.3776
.3757 -1.3842	.3670 -1.3672	.4392 -1.3834	.5672 -1.3568	.3981 -1.3846
.3784 -1.3823	.3695 -1.3614	.4418 -1.3805	.5702 -1.3556	.4022 -1.3709
.3809 -1.3855	.3722 -1.3588	.4450 -1.3835	.5728 -1.3559	.4047 -1.3736
.3857 -1.3785	.3751 -1.3603	.4475 -1.3862	.5755 -1.3629	.4073 -1.3668
.3886 -1.3763	2445653 +	.4500 -1.3860	.5781 -1.3625	.4099 -1.3699
.3912 -1.3756	.3256 -1.3710	.4524 -1.3875	.5806 -1.3644	.4129 -1.3729
.3938 -1.3716	.3286 -1.3680	.4549 -1.3864	.5832 -1.3708	.4153 -1.3700
.3963 -1.3645	.3311 -1.3577	.4576 -1.3840	.5858 -1.3732	.4180 -1.3617
.3988 -1.3637	.3336 -1.3617	.4623 -1.3801	.5888 -1.3732	.4204 -1.3650
.4014 -1.3610	.3362 -1.3473	.4649 -1.3790	.5914 -1.3745	.4226 -1.3576
.4038 -1.3595	.3388 -1.3624	.4675 -1.3732	.5940 -1.3775	.4252 -1.3638
.4064 -1.3581	.3414 -1.3535	.4700 -1.3681	.5997 -1.3847	.4276 -1.3664
.4090 -1.3550	.3440 -1.3471	.4723 -1.3679	.6024 -1.3838	.4301 -1.3662
.4123 -1.3608	.3465 -1.3607	.4752 -1.3654	.6049 -1.3844	.4326 -1.3667
.4152 -1.3614	.3490 -1.3491	.4776 -1.3618	.6074 -1.3838	.4351 -1.3673
.4178 -1.3574	.3544 -1.3676	.4800 -1.3565	.6101 -1.3772	.4380 -1.3680

.4405 -1.3727	.5694 -1.3570	.4073 -1.3834	.4195 -1.3689	.2727 -1.3882
.4429 -1.3702	.5719 -1.3533	.4102 -1.3810	.4220 -1.3692	.2747 -1.3806
.4453 -1.3797	.5743 -1.3550	.4128 -1.3810	.4245 -1.3647	.2771 -1.3823
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.4502 -1.3803	.5792 -1.3639	.4178 -1.3783	.4294 -1.3690	.2811 -1.3792
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.4550 -1.3797	.5839 -1.3601	.4229 -1.3793	.4343 -1.3692	.2854 -1.3743
.4575 -1.3799	.5862 -1.3684	.4267 -1.3708	.4368 -1.3708	.2873 -1.3710
.4599 -1.3828	.5886 -1.3699	.4293 -1.3686	.4413 -1.3760	.2893 -1.3706
.4624 -1.3756	.5918 -1.3710	.4318 -1.3648	.4439 -1.3730	.2912 -1.3727
.4648 -1.3676	.5943 -1.3666	.4353 -1.3623	.4463 -1.3789	.2936 -1.3685
.4674 -1.3758	.5969 -1.3675	.4381 -1.3595	.4488 -1.3740	.2955 -1.3646
.4701 -1.3873	.6021 -1.3735	.4407 -1.3608	.4521 -1.3789	.2981 -1.3636
.4726 -1.3757	.6085 -1.3903	.4431 -1.3574	.4546 -1.3796	.2999 -1.3646
.4773 -1.3644	.6111 -1.3696	.4456 -1.3588	.4571 -1.3766	.3019 -1.3627
.4796 -1.3708	.6135 -1.3777	.4483 -1.3568	.4596 -1.3782	.3039 -1.3644
.4819 -1.3507	.6169 -1.3718	.4510 -1.3612	.4621 -1.3790	.3066 -1.3645
.4843 -1.3818	.6191 -1.3774	2445680 +	.4646 -1.3719	.3086 -1.3600
.4880 -1.3786	.6213 -1.3725	.3279 -1.3691	.4684 -1.3774	.3110 -1.3637
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.4933 -1.3508	.6263 -1.3606	.3330 -1.3683	.4735 -1.3660	.3148 -1.3646
.4958 -1.3595	.6286 -1.3812	.3362 -1.3673	.4759 -1.3619	.3167 -1.3640
.4981 -1.3650	.6309 -1.3718	.3391 -1.3660	.4785 -1.3678	.3188 -1.3706
.5004 -1.3634	.6332 -1.3658	.3416 -1.3693	.4812 -1.3645	.3206 -1.3676
.5028 -1.3712	.6355 -1.3546	.3442 -1.3692	.4836 -1.3654	.3226 -1.3714
.5051 -1.3652	.6377 -1.3648	.3469 -1.3657	.4863 -1.3632	.3246 -1.3720
.5086 -1.3664	.6400 -1.3578	.3497 -1.3676	.4888 -1.3673	.3265 -1.3791
.5109 -1.3669	.6423 -1.3587	.3525 -1.3645	.4913 -1.3675	.3297 -1.3754
.5155 -1.3650	.6444 -1.3672	.3679 -1.3712	2445681 +	.3319 -1.3771
.5181 -1.3623	.6473 -1.3582	.3705 -1.3731	.2354 -1.3612	.3338 -1.3806
.5206 -1.3662	.6497 -1.3640	.3733 -1.3791	.2374 -1.3579	.3366 -1.3802
.5230 -1.3781	.6523 -1.3495	.3758 -1.3757	.2395 -1.3641	.3384 -1.3822
.5254 -1.3646	.6546 -1.3564	.3784 -1.3763	.2416 -1.3648	.3406 -1.3824
.5278 -1.3823	2445677 +	.3809 -1.3764	.2437 -1.3696	.3425 -1.3855
.5303 -1.3868	.3688 -1.3592	.3835 -1.3799	.2456 -1.3688	.3445 -1.3827
.5328 -1.3823	.3718 -1.3630	.3874 -1.3743	.2476 -1.3701	.3463 -1.3838
.5356 -1.3717	.3747 -1.3590	.3905 -1.3755	.2495 -1.3723	.3485 -1.3796
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.5451 -1.3784	.3804 -1.3601	.3958 -1.3702	.2534 -1.3828	.3522 -1.3778
.5474 -1.3738	.3829 -1.3599	.3982 -1.3672	.2565 -1.3814	.3542 -1.3774
.5499 -1.3803	.3857 -1.3624	.4008 -1.3672	.2584 -1.3833	.3566 -1.3785
.5522 -1.3630	.3884 -1.3629	.4034 -1.3698	.2603 -1.3860	.3584 -1.3743
.5545 -1.3696	.3913 -1.3657	.4059 -1.3684	.2622 -1.3821	.3605 -1.3744
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.5614 -1.3693	.4019 -1.3779	.4146 -1.3677	.2686 -1.3812	.3662 -1.3695
.5639 -1.3651	.4046 -1.3784	.4171 -1.3681	.2707 -1.3804	.3682 -1.3642

.3701 -1.3660	.4675 -1.3631	.2751 -1.3649	.3705 -1.3699	.4740 -1.3813
.3719 -1.3653	.4694 -1.3680	.2769 -1.3646	.3724 -1.3714	.4768 -1.3768
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.3776 -1.3606	.4753 -1.3737	.2839 -1.3629	.3780 -1.3719	.4825 -1.3697
.3797 -1.3605	.4771 -1.3781	.2858 -1.3598	.3798 -1.3768	.4849 -1.3788
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.3894 -1.3636	.4865 -1.3829	.2940 -1.3736	.3884 -1.3854	.4942 -1.3630
.3913 -1.3637	.4885 -1.3841	.2959 -1.3717	.3903 -1.3882	.4960 -1.3650
.3933 -1.3720	.4904 -1.3910	.2978 -1.3705	.3926 -1.3846	.4979 -1.3630
.3952 -1.3709	.4943 -1.3817	.2998 -1.3740	.3944 -1.3799	.4998 -1.3630
.3972 -1.3745	.4962 -1.3840	.3026 -1.3721	.3962 -1.3874	.5018 -1.3606
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.4014 -1.3748	.5002 -1.3826	.3063 -1.3770	.4010 -1.3886	.5059 -1.3637
.4038 -1.3759	.5021 -1.3778	.3082 -1.3796	.4031 -1.3821	.5079 -1.3620
.4057 -1.3782	.5041 -1.3777	.3111 -1.3829	.4049 -1.3794	.5098 -1.3574
.4076 -1.3806	.5066 -1.3758	.3130 -1.3834	.4079 -1.3785	.5117 -1.3575
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.4137 -1.3821	.5150 -1.3688	.3186 -1.3821	.4134 -1.3745	.5173 -1.3624
.4167 -1.3829	.5168 -1.3668	.3205 -1.3821	.4154 -1.3651	.5192 -1.3768
.4186 -1.3860	.5188 -1.3634	.3226 -1.3817	.4171 -1.3658	.5212 -1.3689
.4205 -1.3856	.5207 -1.3668	.3245 -1.3789	.4189 -1.3655	.5231 -1.3754
.4227 -1.3800	.5227 -1.3675	.3265 -1.3777	.4208 -1.3685	.5255 -1.3819
.4246 -1.3815	.5247 -1.3632	.3284 -1.3793	.4228 -1.3644	.5274 -1.3754
.4265 -1.3825	.5268 -1.3671	.3303 -1.3841	.4246 -1.3673	.5292 -1.3792
.4284 -1.3772	.5293 -1.3609	.3323 -1.3784	.4264 -1.3618	.5312 -1.3786
.4303 -1.3770	2445683 +	.3346 -1.3753	.4282 -1.3596	.5332 -1.3811
.4321 -1.3758	.2418 -1.3868	.3365 -1.3737	.4300 -1.3603	.5351 -1.3861
.4340 -1.3777	.2443 -1.3766	.3383 -1.3683	.4324 -1.3599	.5371 -1.3881
.4375 -1.3726	.2463 -1.3791	.3402 -1.3720	.4344 -1.3600	.5391 -1.3812
.4395 -1.3687	.2482 -1.3759	.3423 -1.3690	.4362 -1.3642	.5411 -1.3901
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.4521 -1.3638	.2601 -1.3713	.3545 -1.3648	.4573 -1.3825	.5538 -1.3832
.4539 -1.3617	.2621 -1.3729	.3564 -1.3617	.4592 -1.3803	.5557 -1.3750
.4558 -1.3630	.2639 -1.3776	.3584 -1.3579	.4615 -1.3841	.5576 -1.3689
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.4656 -1.3694	.2732 -1.3670	.3686 -1.3682	.4722 -1.3863	2445706 +

.2261 -1.3753	.3330 -1.3681	.2567 -1.3677	.5496 -1.3614	.4921 -1.3808
.2286 -1.3749	.3350 -1.3623	.2587 -1.3705	.5530 -1.3631	.4959 -1.3777
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.2496 -1.3655	.3542 -1.3709	.2797 -1.3788	.5846 -1.3710	.5321 -1.3600
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.2544 -1.3703	2445723 +	.2841 -1.3846	.5927 -1.3810	.5390 -1.3701
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.2586 -1.3653	.3332 -1.3685	.2881 -1.3750	.5996 -1.3735	.5464 -1.3776
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.2654 -1.3674	.3405 -1.3718	.2945 -1.3855	.6146 -1.3707	.5569 -1.3816
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.2770 -1.3741	.3519 -1.3749	.3071 -1.3699	.6334 -1.3653	.5738 -1.3736
.2798 -1.3736	.3554 -1.3685	.3091 -1.3742	.6368 -1.3674	.5772 -1.3723
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.2842 -1.3616	.3603 -1.3708	.3130 -1.3796	.6443 -1.3699	.5842 -1.3694
.2867 -1.3633	.3625 -1.3667	.3152 -1.3682	.6479 -1.3754	.5879 -1.3673
.2889 -1.3740	.3648 -1.3696	.3177 -1.3696	.6513 -1.3778	.5916 -1.3660
.2909 -1.3737	.3671 -1.3731	.3199 -1.3681	.6551 -1.3795	.5951 -1.3676
.2932 -1.3751	.3693 -1.3637	.3220 -1.3604	2446356 +	.5986 -1.3674
.2952 -1.3757	.3728 -1.3723	.3252 -1.3684	.4179 -1.3794	.6023 -1.3639
.2974 -1.3745	.3814 -1.3701	2446355 +	.4220 -1.3813	.6056 -1.3693
.2995 -1.3776	.3836 -1.3728	.4923 -1.3659	.4262 -1.3793	.6093 -1.3659
.3016 -1.3754	.3858 -1.3654	.4966 -1.3656	.4307 -1.3818	.6126 -1.3724
.3037 -1.3771	.3879 -1.3721	.5002 -1.3692	.4349 -1.3751	.6161 -1.3698
.3070 -1.3752	.3901 -1.3694	.5043 -1.3737	.4387 -1.3758	.6195 -1.3746
.3090 -1.3733	2445737 +	.5083 -1.3728	.4432 -1.3695	.6229 -1.3730
.3123 -1.3767	.2359 -1.3624	.5123 -1.3802	.4471 -1.3595	.6267 -1.3773
.3142 -1.3751	.2379 -1.3598	.5159 -1.3839	.4527 -1.3667	.6304 -1.3840
.3169 -1.3775	.2399 -1.3667	.5204 -1.3800	.4566 -1.3634	.6337 -1.3796
.3188 -1.3726	.2417 -1.3638	.5238 -1.3846	.4606 -1.3659	.6373 -1.3851
.3207 -1.3693	.2436 -1.3604	.5272 -1.3847	.4643 -1.3739	2446359 +
.3227 -1.3679	.2458 -1.3603	.5314 -1.3780	.4683 -1.3735	.4130 -1.3698
.3249 -1.3697	.2479 -1.3646	.5352 -1.3841	.4735 -1.3741	.4188 -1.3778
.3272 -1.3660	.2497 -1.3661	.5387 -1.3655	.4792 -1.3799	.4226 -1.3762
.3291 -1.3672	.2520 -1.3640	.5420 -1.3670	.4836 -1.3819	.4261 -1.3704
.3311 -1.3667	.2547 -1.3712	.5462 -1.3621	.4885 -1.3810	.4296 -1.3764

.4337 -1.3707	.6272 -1.3614	.4516 -1.3777	.4197 -1.3600	.5379 -1.3713
.4374 -1.3731	.6307 -1.3628	.4544 -1.3785	.4221 -1.3597	.5400 -1.3796
.4409 -1.3737	2446746 +	.4588 -1.3796	.4243 -1.3639	.5424 -1.3784
.4444 -1.3724	.3369 -1.3521	.4611 -1.3778	.4267 -1.3778	.5446 -1.3763
.4483 -1.3753	.3392 -1.3628	.4679 -1.3789	.4311 -1.3783	.5468 -1.3696
.4518 -1.3771	.3414 -1.3656	.4712 -1.3739	.4333 -1.3746	.5492 -1.3634
.4561 -1.3726	.3437 -1.3618	2446747 +	.4354 -1.3749	.5525 -1.3605
.4606 -1.3661	.3459 -1.3516	.3178 -1.3788	.4376 -1.3707	.5548 -1.3682
.4641 -1.3700	.3483 -1.3557	.3201 -1.3706	.4398 -1.3700	.5614 -1.3559
.4680 -1.3757	.3505 -1.3561	.3222 -1.3772	.4420 -1.3743	.5659 -1.3570
.4723 -1.3725	.353 -1.3764	.3245 -1.3713	.4465 -1.3725	.5685 -1.3502
.4765 -1.3696	.3557 -1.3832	.3279 -1.3818	.4486 -1.3708	.5703 -1.3545
.4834 -1.3771	.3582 -1.3741	.3305 -1.3713	.4509 -1.3745	.5726 -1.3573
.4882 -1.3791	.3606 -1.3725	.3331 -1.3743	.4535 -1.3753	.5748 -1.3573
.4918 -1.3727	.3628 -1.3723	.3355 -1.3685	.4556 -1.3729	.5771 -1.3562
.4953 -1.3674	.3651 -1.3897	.3378 -1.3705	.4579 -1.3723	.5792 -1.3563
.4988 -1.3719	.3675 -1.3899	.3402 -1.3724	.4601 -1.3727	.5813 -1.3640
.5031 -1.3801	.3697 -1.3794	.3424 -1.3645	.4644 -1.3721	.5834 -1.3698
.5067 -1.3781	.3719 -1.3799	.3448 -1.3587	.4666 -1.3695	.5855 -1.3758
.5102 -1.3758	.374 -1.3813	.3472 -1.3675	.4689 -1.3701	.5876 -1.3758
.5143 -1.3729	.3794 -1.3819	.3524 -1.3698	.4716 -1.3702	.5901 -1.3795
.5179 -1.3682	.3819 -1.3783	.3547 -1.3707	.4737 -1.3687	.5923 -1.3782
.5212 -1.3760	.3844 -1.3742	.3572 -1.3658	.4761 -1.3643	.5945 -1.3810
.5246 -1.3745	.3876 -1.3675	.3598 -1.3697	.4784 -1.3609	.5967 -1.3813
.5283 -1.3727	.3901 -1.3654	.3623 -1.3726	.4807 -1.3619	.5988 -1.3814
.5316 -1.3729	.3923 -1.3707	.3650 -1.3714	.4830 -1.3587	.6010 -1.3830
.5421 -1.3751	.3954 -1.3649	.3678 -1.3745	.4852 -1.3598	.6031 -1.3846
.5456 -1.3741	.3983 -1.3650	.3701 -1.3769	.4874 -1.3589	.6053 -1.3808
.5490 -1.3721	.4006 -1.3532	.3727 -1.3726	.4896 -1.3569	.6077 -1.3797
.5524 -1.3717	.4053 -1.3577	.3751 -1.3759	.4918 -1.3569	.6097 -1.3780
.5558 -1.3657	.4078 -1.3540	.3775 -1.3740	.4944 -1.3614	.6119 -1.3789
.5597 -1.3700	.4102 -1.3542	.3798 -1.3759	.4965 -1.3591	.6140 -1.3732
.5641 -1.3698	.4125 -1.3601	.3820 -1.3774	.4988 -1.3561	.6162 -1.3669
.5674 -1.3765	.4148 -1.3598	.3843 -1.3678	.5010 -1.3606	.6183 -1.3657
.5706 -1.3687	.4171 -1.3599	.3872 -1.3674	.5035 -1.3630	.6208 -1.3654
.5750 -1.3654	.4195 -1.3613	.3895 -1.3652	.5057 -1.3666	.6229 -1.3619
.5787 -1.3828	.4216 -1.3650	.3919 -1.3657	.5079 -1.3725	.6251 -1.3607
.5849 -1.3695	.4239 -1.3643	.3941 -1.3672	.5100 -1.3748	.6273 -1.3607
.5895 -1.3740	.4261 -1.3643	.3964 -1.3697	.5123 -1.3766	.6297 -1.3620
.5933 -1.3754	.4284 -1.3694	.3987 -1.3703	.5144 -1.3717	.6318 -1.3590
.5969 -1.3751	.4308 -1.3654	.4011 -1.3667	.5165 -1.3776	.6340 -1.3556
.6010 -1.3829	.4333 -1.3688	.4034 -1.3697	.5187 -1.3774	.6362 -1.3569
.6047 -1.3767	.4356 -1.3752	.4056 -1.3668	.5209 -1.3790	.6384 -1.3565
.6122 -1.3751	.4378 -1.3769	.4080 -1.3688	.5245 -1.3847	.6407 -1.3582
.6161 -1.3649	.4401 -1.3753	.4104 -1.3681	.5312 -1.3811	.6429 -1.3521
.6199 -1.3699	.4423 -1.3781	.4127 -1.3588	.5334 -1.3787	.6451 -1.3530
.6235 -1.3729	.4493 -1.3841	.4150 -1.3573	.5356 -1.3724	.6475 -1.3610

.6497 -1.3620	.3389 -1.3800	.3946 -1.3624	.4513 -1.3586	.5077 -1.3689
.6520 -1.3635	.3412 -1.3807	.3970 -1.3621	.4537 -1.3561	.5112 -1.3738
.6544 -1.3600	.3436 -1.3824	.3993 -1.3676	.4560 -1.3540	.5138 -1.3669
.6566 -1.3718	.3461 -1.3749	.4016 -1.3709	.4622 -1.3621	.5159 -1.3632
.6589 -1.3743	.3490 -1.3789	.4041 -1.3695	.4645 -1.3537	.5201 -1.3521
.6610 -1.3789	.3512 -1.3823	.4069 -1.3645	.4669 -1.3581	.5226 -1.3600
.6632 -1.3765	.3537 -1.3816	.4095 -1.3778	.4692 -1.3666	.5248 -1.3544
.6654 -1.3845	.3560 -1.3753	.4119 -1.3819	.4715 -1.3622	.5269 -1.3561
.6677 -1.3792	.3585 -1.3695	.4142 -1.3831	.4738 -1.3708	.5291 -1.3544
.6700 -1.3814	.3612 -1.3742	.4164 -1.3827	.4766 -1.3674	.5314 -1.3518
.6723 -1.3798	.3634 -1.3673	.4189 -1.3820	.4789 -1.3700	.5337 -1.3547
.6747 -1.3886	.3664 -1.3605	.4211 -1.3789	.4814 -1.3741	.5359 -1.3605
.6769 -1.3790	.3687 -1.3598	.4234 -1.3783	.4836 -1.3751	.5386 -1.3622
.6793 -1.3811	.3712 -1.3603	.4260 -1.3777	.4860 -1.3757	.5407 -1.3655
2446748 +	.3738 -1.3584	.4310 -1.3760	.4889 -1.3839	.5430 -1.3667
.3225 -1.3631	.3763 -1.3572	.4331 -1.3706	.4915 -1.3787	.5454 -1.3618
.3248 -1.3671	.3788 -1.3557	.4355 -1.3732	.4939 -1.3833	.5477 -1.3672
.3272 -1.3672	.3814 -1.3489	.4387 -1.3676	.4961 -1.3811	.5498 -1.3694
.3296 -1.3715	.3837 -1.3533	.4413 -1.3648	.4986 -1.3784	.5520 -1.3760
.3319 -1.3729	.3875 -1.3594	.4440 -1.3642	.5009 -1.3802	.5542 -1.3733
.3342 -1.3778	.3899 -1.3587	.4464 -1.3612	.5032 -1.3768	.5572 -1.3781
.3366 -1.3849	.3922 -1.3582	.4485 -1.3585	.5054 -1.3723	.5594 -1.3705

Fig. 1, 2 and 3 show the graphical representation of the data given in Table 2. I call the attention to the fact that even the highest amplitude of the light variation is less than six hundreds of a magnitude.

Johnson *B* (Table 3) and *U* (Table 4) observations were obtained on three nights in 1980 and 1981. Due to the three filter cycle the data are not as dense as in the case of a single filter. Although these observations do not have a long timebase, maybe they are valuable to check. Light curves are shown in Fig. 4.

Table 3. Johnson *B* observations obtained at Konkoly Observatory in 1980 and 1981

78 Tau-HR	.3537 -1.3644	.4729 -1.3515	.3389 -1.3816	.3451 -1.3659
1427	.3643 -1.3872	.4846 -1.3545	.3505 -1.3579	.3546 -1.3613
2444243 +	.3740 -1.3773	.4961 -1.3657	.3610 -1.3536	.3641 -1.3602
.2685 -1.3624	.3849 -1.3617	.5068 -1.3512	.3715 -1.3379	.3732 -1.3563
.2795 -1.3764	.3958 -1.3528	2444258 +	2444619 +	.3828 -1.3620
.2904 -1.3692	.4068 -1.3462	.2749 -1.3701	.2862 -1.3644	.3919 -1.3624
.3024 -1.3656	.4170 -1.3582	.2846 -1.3561	.2956 -1.3513	.4018 -1.3635
.3130 -1.3542	.4283 -1.3764	.2950 -1.3421	.3060 -1.3596	.4116 -1.3586
.3236 -1.3467	.4391 -1.3853	.3056 -1.3634	.3152 -1.3589	.4220 -1.3505
.3336 -1.3502	.4498 -1.3743	.3183 -1.3612	.3249 -1.3670	.4314 -1.3633
.3436 -1.3604	.4607 -1.3689	.3286 -1.3785	.3345 -1.3644	.4410 -1.3555

Table 4. Johnson U observations obtained at Konkoly Observatory in 1980 and 1981

78 Tau-HR	.3546 −1.3693	.4737 −1.3455	.3294 −1.3678	.3353 −1.3432
1427	.3651 −1.3726	.4855 −1.3431	.3397 −1.3757	.3459 −1.3448
2444243 +	.3748 −1.3583	.4969 −1.3566	.3514 −1.3509	.3553 −1.3429
.2694 −1.3459	.3858 −1.3465	.5076 −1.3670	.3619 −1.3330	.3649 −1.3546
.2803 −1.3714	.3966 −1.3398	.5190 −1.3699	.3723 −1.3181	.3740 −1.3404
.2912 −1.3549	.4076 −1.3344	2444258 +	2444619 +	.3836 −1.3449
.3032 −1.3533	.4179 −1.3504	.2757 −1.3516	.2870 −1.3440	.3927 −1.3464
.3139 −1.3423	.4291 −1.3600	.2854 −1.3516	.2964 −1.3316	.4026 −1.3479
.3245 −1.3300	.4399 −1.3763	.2958 −1.3256	.3068 −1.3422	.4124 −1.3434
.3344 −1.3385	.4506 −1.3569	.3064 −1.3470	.3161 −1.3460	.4228 −1.3412
.3444 −1.3458	.4616 −1.3549	.3191 −1.3406	.3257 −1.3502	.4322 −1.3453

For the sake of completeness we present the original Hungarian campaign observations to both the HR 1422 and HR 1428 comparison stars. No averaging of the two consecutive measurements are applied here, as opposite to the published data in the campaign paper. Fig. 5. shows the light curves to HR 1422 (left side panels) and to HR 1428 (right side panels). Slight differences of the corresponding points on the left and right sides suggest slight differences in the circumstances of the observation of the given comparison star. Data for 78 θ^2 Tau to HR 1422 are given in Table 5. while Table 6. contains the data to

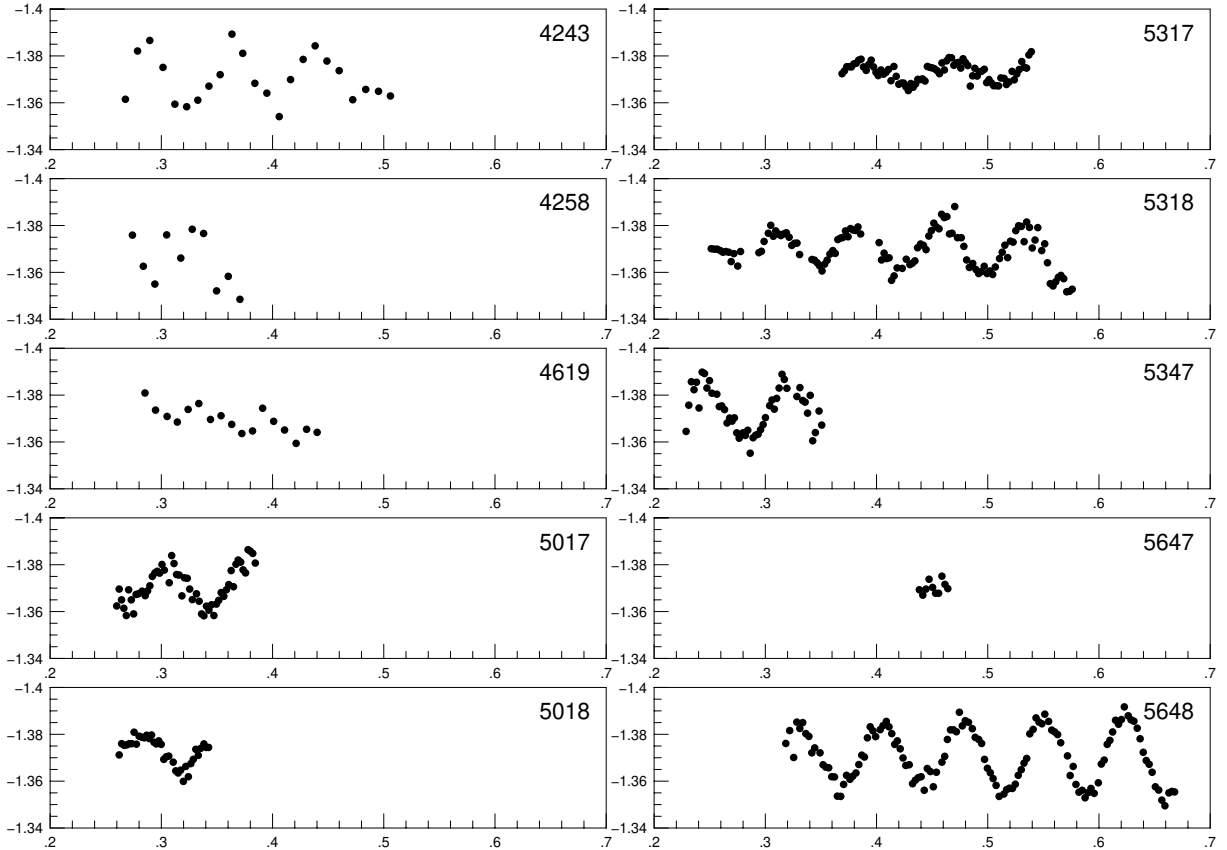


Figure 1: Light curves 78 θ^2 Tau obtained between Jan. 4/5 1980 and Nov. 9/10 1983 at Konkoly Observatory, Hungary in Johnson V colour.

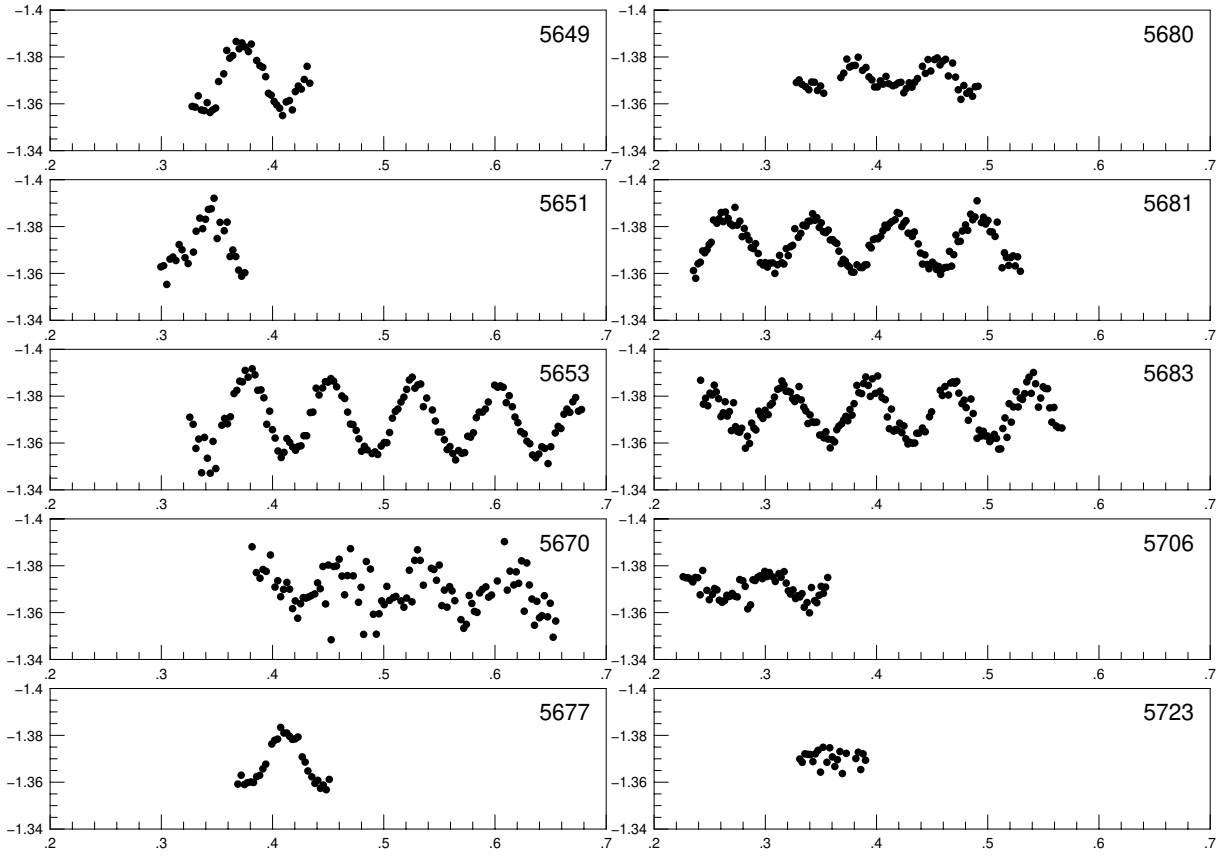


Figure 2: Light curves of 78 θ^2 Tau obtained between Nov. 10/11 1983 and Jan. 23/24 1984 in V colour.

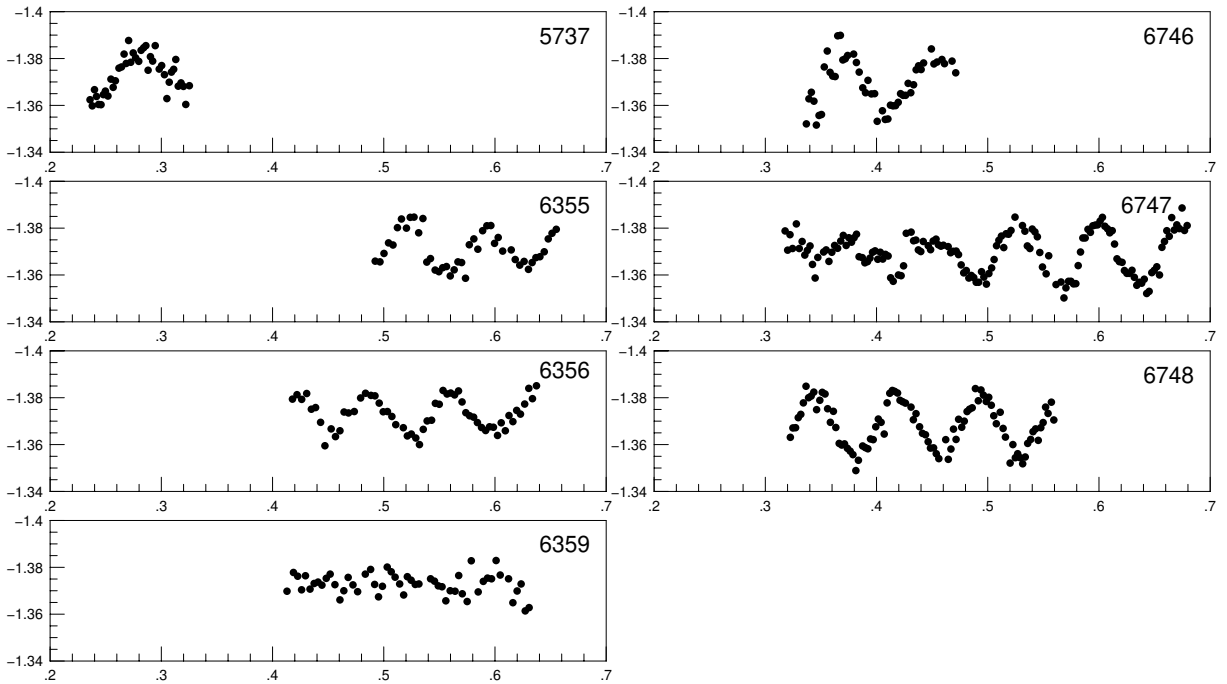


Figure 3: Light curves of 78 θ^2 Tau obtained between Feb. 6/7 1984 and Nov. 13/14 1986 in V colour. The last three panels are the campaign data transferred to HR 1427.

HR 1428. Direct comparison of HR 1422 to HR 1428 is possible to see the precision of the observation.

Table 5. Johnson V observations to HR 1422 obtained at Konkoly Observatory by M. Paparó in 1986, in the international campaign of M. Breger.

78 Tau-HR	.3794 −2.2016	.4333 −2.1885	.3305 −2.1867	.3843 −2.1832
1422	.3819 −2.1980	.4356 −2.1949	.3331 −2.1897	.3872 −2.1828
2446746 +	.3844 −2.1939	.4378 −2.1966	.3355 −2.1839	.3895 −2.1806
.3369 −2.1718	.3876 −2.1872	.4401 −2.1950	.3378 −2.1859	.3919 −2.1811
.3392 −2.1825	.3901 −2.1851	.4423 −2.1978	.3402 −2.1878	.3941 −2.1826
.3414 −2.1853	.3923 −2.1904	.4493 −2.2038	.3424 −2.1799	.3964 −2.1851
.3437 −2.1815	.3954 −2.1846	.4516 −2.1974	.3448 −2.1741	.3987 −2.1857
.3459 −2.1713	.3983 −2.1847	.4544 −2.1982	.3472 −2.1829	.4011 −2.1821
.3483 −2.1754	.4006 −2.1729	.4566 −2.1856	.3524 −2.1852	.4034 −2.1851
.3505 −2.1758	.4053 −2.1774	.4588 −2.1993	.3547 −2.1861	.4056 −2.1822
.3530 −2.1961	.4078 −2.1737	.4611 −2.1975	.3572 −2.1812	.4080 −2.1842
.3557 −2.2029	.4102 −2.1739	.4637 −2.1798	.3598 −2.1851	.4104 −2.1835
.3582 −2.1938	.4125 −2.1798	.4658 −2.1763	.3623 −2.1880	.4127 −2.1742
.3606 −2.1922	.4148 −2.1795	.4679 −2.1986	.3650 −2.1868	.4150 −2.1727
.3628 −2.1920	.4171 −2.1796	.4712 −2.1936	.3678 −2.1899	.4173 −2.1616
.3651 −2.2094	.4195 −2.1810	2446747 +	.3701 −2.1923	.4197 −2.1754
.3675 −2.2096	.4216 −2.1847	.3178 −2.1942	.3727 −2.1880	.4221 −2.1751
.3697 −2.1991	.4239 −2.1840	.3201 −2.1860	.3751 −2.1913	.4243 −2.1793
.3719 −2.1996	.4261 −2.1840	.3222 −2.1926	.3775 −2.1894	.4267 −2.1932
.3740 −2.2010	.4284 −2.1891	.3245 −2.1867	.3798 −2.1913	.4289 −2.2030
.3766 −2.1703	.4308 −2.1851	.3279 −2.1972	.3820 −2.1928	.4311 −2.1937

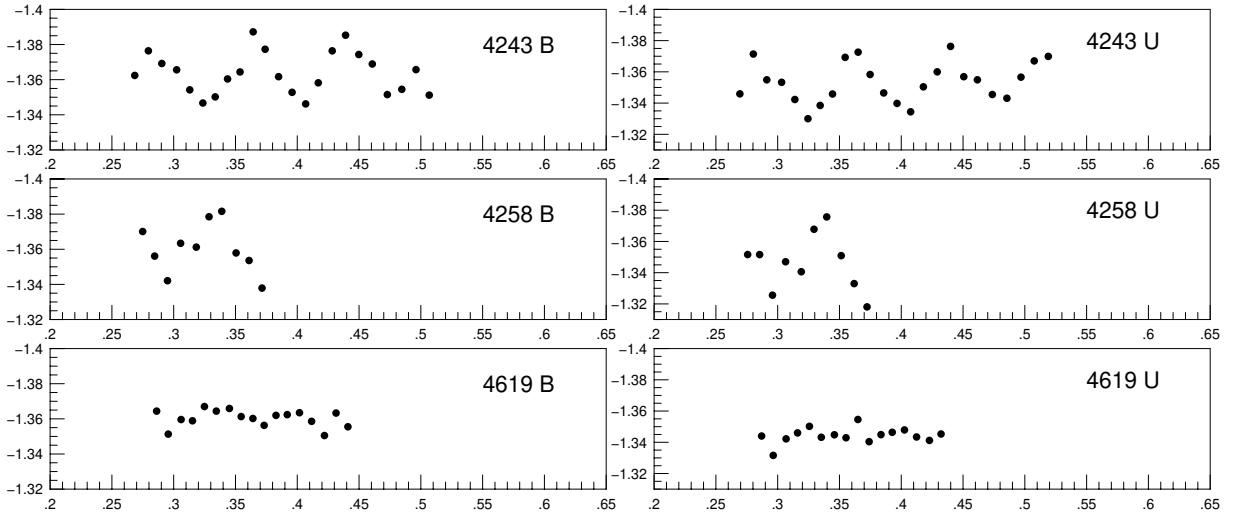


Figure 4: B and U light curves of 78 θ^2 Tau obtained in 1980-81 at Konkoly Observatory compared to HR 1427. B curves are on left side and U ones on the rights.

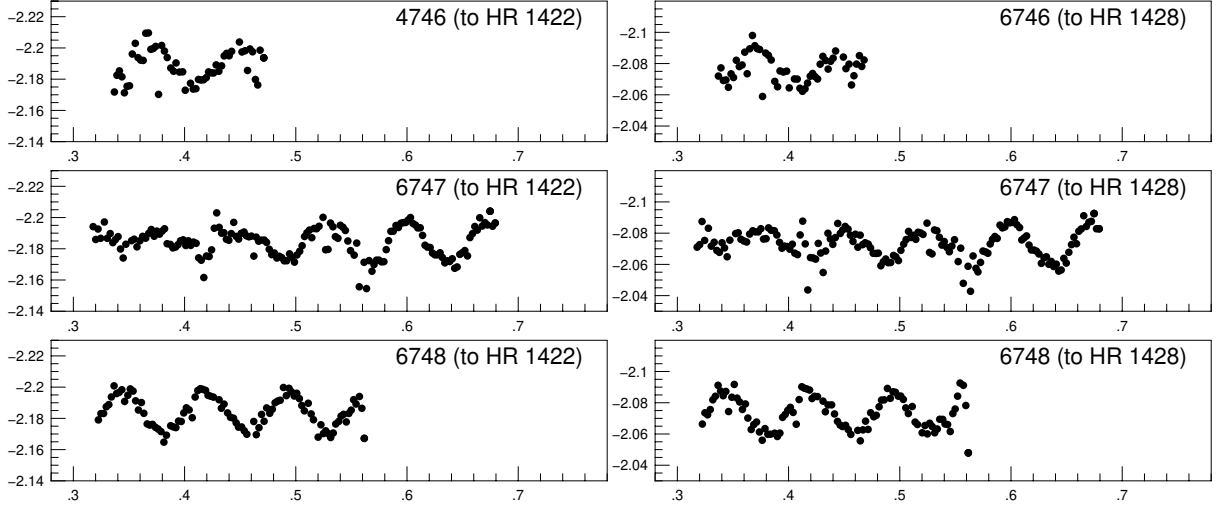


Figure 5: Johnson V observations obtained at Konkoly Observatory by M. Paparó in 1986, in the international campaign of M. Breger for both HR 1422 (left sides) and HR 1428 (right sides).

.4333 -2.1900	.4918 -2.1723	.5525 -2.1759	.6119 -2.1934	.6700 -2.1968
.4354 -2.1903	.4944 -2.1768	.5548 -2.1836	.6140 -2.1886	.6723 -2.1952
.4376 -2.1861	.4965 -2.1745	.5571 -2.1557	.6162 -2.1823	.6747 -2.2040
.4398 -2.1854	.4988 -2.1715	.5614 -2.1713	.6183 -2.1811	.6769 -2.1944
.4420 -2.1897	.5010 -2.1760	.5636 -2.1545	.6208 -2.1808	.6793 -2.1965
.4442 -2.1969	.5035 -2.1784	.5659 -2.1724	.6229 -2.1773	2446748 +
.4465 -2.1879	.5057 -2.1820	.5685 -2.1656	.6251 -2.1761	.3225 -2.1790
.4486 -2.1862	.5079 -2.1879	.5703 -2.1699	.6273 -2.1761	.3248 -2.1830
.4509 -2.1899	.5100 -2.1902	.5726 -2.1727	.6297 -2.1774	.3272 -2.1831
.4535 -2.1907	.5123 -2.1920	.5748 -2.1727	.6318 -2.1744	.3296 -2.1874
.4556 -2.1883	.5144 -2.1871	.5771 -2.1716	.6340 -2.1710	.3319 -2.1888
.4579 -2.1877	.5165 -2.1930	.5792 -2.1717	.6362 -2.1723	.3342 -2.1937
.4601 -2.1881	.5187 -2.1928	.5813 -2.1794	.6384 -2.1719	.3366 -2.2008
.4623 -2.1753	.5209 -2.1944	.5834 -2.1852	.6407 -2.1736	.3389 -2.1959
.4644 -2.1875	.5245 -2.2001	.5855 -2.1912	.6429 -2.1675	.3412 -2.1967
.4666 -2.1849	.5268 -2.1794	.5876 -2.1912	.6451 -2.1684	.3436 -2.1983
.4689 -2.1855	.5290 -2.1796	.5901 -2.1949	.6475 -2.1764	.3461 -2.1908
.4716 -2.1856	.5312 -2.1965	.5923 -2.1936	.6497 -2.1774	.3490 -2.1948
.4737 -2.1841	.5334 -2.1941	.5945 -2.1964	.6520 -2.1789	.3512 -2.1989
.4761 -2.1797	.5356 -2.1878	.5967 -2.1967	.6544 -2.1754	.3537 -2.1975
.4784 -2.1763	.5379 -2.1867	.5988 -2.1968	.6566 -2.1872	.3560 -2.1912
.4807 -2.1773	.5400 -2.1950	.6010 -2.1984	.6589 -2.1897	.3585 -2.1854
.4830 -2.1741	.5424 -2.1938	.6031 -2.2000	.6610 -2.1943	.3612 -2.1901
.4852 -2.1752	.5446 -2.1917	.6053 -2.1962	.6632 -2.1919	.3634 -2.1832
.4874 -2.1743	.5468 -2.1850	.6077 -2.1951	.6654 -2.1999	.3664 -2.1764
.4896 -2.1723	.5492 -2.1788	.6097 -2.1934	.6677 -2.1946	.3687 -2.1757

.3712 -2.1762	.4119 -2.1978	.4537 -2.1720	.4961 -2.1970	.5359 -2.1764
.3738 -2.1743	.4142 -2.1990	.4560 -2.1699	.4986 -2.1943	.5386 -2.1781
.3763 -2.1731	.4164 -2.1986	.4622 -2.1780	.5009 -2.1961	.5407 -2.1814
.3788 -2.1716	.4189 -2.1979	.4645 -2.1696	.5032 -2.1927	.5430 -2.1826
.3814 -2.1648	.4211 -2.1948	.4669 -2.1740	.5054 -2.1882	.5454 -2.1777
.3837 -2.1692	.4234 -2.1942	.4692 -2.1825	.5077 -2.1848	.5477 -2.1831
.3875 -2.1753	.4260 -2.1936	.4715 -2.1781	.5112 -2.1897	.5498 -2.1853
.3899 -2.1746	.4310 -2.1919	.4738 -2.1867	.5138 -2.1828	.5520 -2.1919
.3922 -2.1741	.4331 -2.1865	.4766 -2.1833	.5159 -2.1791	.5542 -2.1892
.3946 -2.1783	.4355 -2.1891	.4789 -2.1859	.5201 -2.1680	.5572 -2.1940
.3970 -2.1780	.4387 -2.1835	.4814 -2.1900	.5226 -2.1759	.5594 -2.1864
.3993 -2.1835	.4413 -2.1807	.4836 -2.1910	.5248 -2.1703	.5616 -2.1672
.4016 -2.1868	.4440 -2.1801	.4860 -2.1916	.5269 -2.1720	
.4041 -2.1854	.4464 -2.1771	.4889 -2.1998	.5291 -2.1703	
.4069 -2.1804	.4485 -2.1744	.4915 -2.1946	.5314 -2.1677	
.4095 -2.1937	.4513 -2.1745	.4939 -2.1992	.5337 -2.1706	

Table 6. Johnson V observations to HR 1428 obtained at Konkoly Observatory by M. Paparó in 1986, in the international campaign of M. Breger.

78 Tau-HR	.3954 -2.0746	.4658 -2.0781	.3775 -2.0762	.4398 -2.0728
1428	.3983 -2.0751	.4679 -2.0823	.3798 -2.0765	.4420 -2.0771
2446746 +	.4006 -2.0644	.4712 -2.0234	.3820 -2.0834	.4442 -2.0862
.3369 -2.0720	.4053 -2.0702	2446747 +	.3843 -2.0819	.4465 -2.0798
.3392 -2.0772	.4078 -2.0701	.3178 -2.0710	.3872 -2.0816	.4486 -2.0820
.3414 -2.0692	.4102 -2.0642	.3201 -2.0726	.3895 -2.0788	.4509 -2.0843
.3437 -2.0695	.4125 -2.0622	.3222 -2.0875	.3919 -2.0741	.4535 -2.0826
.3459 -2.0648	.4148 -2.0638	.3245 -2.0753	.3941 -2.0704	.4556 -2.0787
.3483 -2.0734	.4171 -2.0675	.3279 -2.0831	.3964 -2.0717	.4579 -2.0747
.3505 -2.0711	.4195 -2.0719	.3305 -2.0717	.3987 -2.0714	.4601 -2.0793
.3530 -2.0821	.4216 -2.0737	.3331 -2.0742	.4011 -2.0697	.4623 -2.0710
.3557 -2.0781	.4239 -2.0716	.3355 -2.0689	.4034 -2.0729	.4644 -2.0787
.3582 -2.0791	.4261 -2.0701	.3378 -2.0677	.4056 -2.0672	.4666 -2.0727
.3606 -2.0873	.4284 -2.0796	.3402 -2.0739	.4080 -2.0663	.4689 -2.0738
.3628 -2.0735	.4308 -2.0846	.3424 -2.0705	.4104 -2.0789	.4716 -2.0730
.3651 -2.0895	.4333 -2.0820	.3448 -2.0649	.4127 -2.0877	.4737 -2.0706
.3675 -2.0980	.4356 -2.0765	.3472 -2.0755	.4150 -2.0731	.4761 -2.0671
.3697 -2.0914	.4378 -2.0814	.3524 -2.0797	.4173 -2.0436	.4784 -2.0670
.3719 -2.0895	.4401 -2.0835	.3547 -2.0802	.4197 -2.0643	.4807 -2.0672
.3740 -2.0890	.4423 -2.0881	.3572 -2.0761	.4221 -2.0641	.4830 -2.0591
.3766 -2.0589	.4493 -2.0842	.3598 -2.0750	.4243 -2.0634	.4852 -2.0617
.3794 -2.0867	.4516 -2.0767	.3623 -2.0743	.4267 -2.0734	.4874 -2.0635
.3819 -2.0853	.4544 -2.0796	.3650 -2.0794	.4289 -2.0673	.4896 -2.0611
.3844 -2.0823	.4566 -2.0663	.3678 -2.0815	.4311 -2.0548	.4918 -2.0612
.3876 -2.0686	.4588 -2.0722	.3701 -2.0808	.4333 -2.0685	.4944 -2.0658
.3901 -2.0651	.4611 -2.0797	.3727 -2.0808	.4354 -2.0799	.4965 -2.0648
.3923 -2.0753	.4637 -2.0851	.3751 -2.0828	.4376 -2.0763	.4988 -2.0625

.5010 -2.0690	.5855 -2.0779	.6654 -2.0911	.3922 -2.0606	.4860 -2.0819
.5035 -2.0730	.5876 -2.0766	.6677 -2.0843	.3946 -2.0706	.4889 -2.0892
.5057 -2.0759	.5901 -2.0852	.6700 -2.0870	.3970 -2.0725	.4915 -2.0828
.5079 -2.0811	.5923 -2.0834	.6723 -2.0876	.3993 -2.0751	.4939 -2.0870
.5100 -2.0772	.5945 -2.0840	.6747 -2.0926	.4016 -2.0770	.4961 -2.0867
.5123 -2.0786	.5967 -2.0874	.6769 -2.0828	.4041 -2.0738	.4986 -2.0842
.5144 -2.0761	.5988 -2.0866	.6793 -2.0828	.4069 -2.0663	.5009 -2.0843
.5165 -2.0806	.6010 -2.0869	2446748 +	.4095 -2.0820	.5032 -2.0821
.5187 -2.0801	.6031 -2.0887	.3225 -2.0664	.4119 -2.0902	.5054 -2.0767
.5209 -2.0792	.6053 -2.0854	.3248 -2.0736	.4142 -2.0893	.5077 -2.0731
.5245 -2.0864	.6077 -2.0836	.3272 -2.0723	.4164 -2.0888	.5112 -2.0776
.5268 -2.0677	.6097 -2.0757	.3296 -2.0756	.4189 -2.0881	.5138 -2.0676
.5290 -2.0667	.6119 -2.0770	.3319 -2.0819	.4211 -2.0827	.5159 -2.0661
.5312 -2.0821	.6140 -2.0782	.3342 -2.0842	.4234 -2.0841	.5201 -2.0608
.5334 -2.0815	.6162 -2.0724	.3366 -2.0912	.4260 -2.0839	.5226 -2.0654
.5356 -2.0773	.6183 -2.0693	.3389 -2.0875	.4310 -2.0810	.5248 -2.0600
.5379 -2.0724	.6208 -2.0692	.3412 -2.0845	.4331 -2.0742	.5269 -2.0669
.5400 -2.0746	.6229 -2.0685	.3436 -2.0872	.4355 -2.0786	.5291 -2.0648
.5424 -2.0709	.6251 -2.0667	.3461 -2.0744	.4387 -2.0787	.5314 -2.0608
.5446 -2.0681	.6273 -2.0607	.3490 -2.0835	.4413 -2.0728	.5337 -2.0632
.5468 -2.0718	.6297 -2.0642	.3512 -2.0917	.4440 -2.0681	.5359 -2.0694
.5492 -2.0758	.6318 -2.0649	.3537 -2.0830	.4464 -2.0657	.5386 -2.0694
.5525 -2.0618	.6340 -2.0601	.3560 -2.0805	.4485 -2.0648	.5407 -2.0664
.5548 -2.0704	.6362 -2.0619	.3585 -2.0757	.4513 -2.0655	.5430 -2.0660
.5571 -2.0479	.6384 -2.0587	.3612 -2.0792	.4537 -2.0628	.5454 -2.0616
.5614 -2.0588	.6407 -2.0601	.3634 -2.0702	.4560 -2.0597	.5477 -2.0731
.5636 -2.0428	.6429 -2.0557	.3664 -2.0629	.4622 -2.0623	.5498 -2.0760
.5659 -2.0654	.6451 -2.0564	.3687 -2.0660	.4645 -2.0556	.5520 -2.0842
.5685 -2.0575	.6475 -2.0639	.3712 -2.0676	.4669 -2.0626	.5542 -2.0926
.5703 -2.0552	.6497 -2.0609	.3738 -2.0613	.4692 -2.0682	.5572 -2.0912
.5726 -2.0613	.6520 -2.0677	.3763 -2.0560	.4715 -2.0629	.5594 -2.0782
.5748 -2.0686	.6544 -2.0727	.3788 -2.0634	.4738 -2.0736	.5616 -2.0479
.5771 -2.0680	.6566 -2.0774	.3814 -2.0598	.4766 -2.0710	
.5792 -2.0671	.6589 -2.0732	.3837 -2.0598	.4789 -2.0720	
.5813 -2.0731	.6610 -2.0812	.3875 -2.0605	.4814 -2.0774	
.5834 -2.0761	.6632 -2.0827	.3899 -2.0584	.4836 -2.0817	

All the Johnson V , and the more sporadic B and U observations (Table 2, 3 and 4) are sent as a single file named as 78tau.arch to the Strassbourg database for archivation. The original campaign observations are submitted as 78tau-HR1422_V.arch and 78tau-HR1428_V.arch files. The structure of the data file is the following: JD integer, JD fraction, relative brightness (differential magnitude), the filter used, and the observer.

The long enough timebase of previously unpublished data to the new, space-born datasets (Kepler, TESS, the upcoming Plato) could be highly valuable for stability investigation. Since 78 Tau belongs to a binary system with orbital period of 140.728 days, the long timebase could be usable even for the stability investigation of the binary system.

FM Com = HR 4684

FM Com was discovered by Breger & Sanval (1968) as the first δ Scuti star in the Coma cluster. The period is short, 0.055 day, and the amplitude is low, 0.02 magnitude. The situation with FM Com was similar to the case of 78 θ^2 Tau. The data were collected in Hungary from season to season from 1980-1989 hoping to obtain a long enough dataset for successful analyses. The stability of the periods and the variability of the pulsation amplitude were the main questions that really needed long and preferably continuous datasets.

Table 7. Journal of the Hungarian observations obtained between 1980-1989

Date (UT)	HJD 2400000+	Length hours	Observations	Filter	Mean for years mag
March 3/4 1980	44302	2.1	18	V	
March 31/Apr 1 1980	44330	2.4	12	UBV	
May 12/13 1980	44372	2.3	10	UBV	
May 14/15 1980	44374	2.3	11	UBV	
Jan 16/17 1981	44621	4.0	18	UBV	
Feb 6/7 1981	44642	2.4	11	UBV	
Feb 2/3 1982	45003	2.5	12	UBV	
Feb 16/17 1982	45017	5.9	105	V	
March 21/22 1982	45050	7.0	124	V	
May 13/14 1982	45103	2.5	58	V	
May 15/16 1982	45105	4.7	94	V	
May 16/17 1982	45106	4.7	92	V	
May 17/18 1982	45107	3.8	73	V	0.27711
Feb 22/23 1983	45388	5.9	89	V	
Apr 25/26 1983	45450	5.6	77	V	
May 12/13 1983	45467	2.8	45	V	
May 13/14 1983	45468	2.3	39	V	
May 15/16 1983	45470	1.4	23	V	0.27608
Jan 18/19 1989	47545	4.7	72	V	
March 22/23 1989	47608	1.0	14	V	
March 26/27 1989	47612	5.0	82	V	
March 27/28 1989	47613	1.7	29	V	0.27115
All		163.9	2098		

The observation obtained in 1982 and 1983 was sufficient to publish a paper by Paparó and Kovács in 1984. It turned out that at the same time it had been widely observed by other groups working on δ Scuti stars, by Italian in 1976, Turkish and Mexican groups in 1982 and 1984. As the date shows the Turkish and Mexican observations nicely overlapped with the Hungarian observations. We joined the data obtained at different sites with longitudes of far away and FM Com was revisited on the Hungarian, Mexican and Turkish data in a paper by Paparó et al. (1993).

Although we published a common investigation, the Turkish and Mexican data were independently published by Peña et al. (1993), so we do not repeat them. We present here only the Hungarian observations that were not previously published.

FM Com was observed with 0.5m telescope at the Piskéstető mountain station, except for 45450 which were obtained by the 1m telescope at the same observing site. Mostly Johnson *V* filter was used, except for the early short runs in 1980 and 1981 where *UBV* filters were used. Comparison was HR 4694, while HR 4688 was also observed as a check star. The details of the data reduction can be found in our first paper on FM Com (Paparó & Kovács, 1984). The journal of the Hungarian observations are listed in Table 7. The length and the number of measurements slightly different comparing to the published papers due to the different decisions on the questionable measurements. In the last column we present the mean value of the given years, that we used for getting the common zero point to the Turkish and Mexican datasets. Altogether 2098 measurements were collected over 163.9 hours in Hungary. The two sets are treated separately. The Johnson *V* observation from HJD 2445017 to 2447613 are presented in Table 8.

Table 8. 1982-83 and 1989 data for FM Com - HR 4694 in Johnson *V* filter.

FM Com - HR	.4780 0.2728	.5505 0.2810	.6159 0.2753	.3596 0.2823
4694	.4802 0.2795	.5526 0.2741	.6180 0.2766	.3618 0.2768
2445017 +	.4824 0.2770	.5549 0.2731	.6201 0.2735	.3639 0.2718
.4156 0.2774	.4845 0.2686	.5569 0.2612	.6221 0.2751	.3667 0.2741
.4178 0.2754	.4869 0.2747	.5587 0.2700	.6242 0.2674	.3689 0.2713
.4201 0.2689	.4892 0.2743	.5612 0.2599	.6264 0.2701	.3710 0.2759
.4223 0.2764	.4916 0.2725	.5633 0.2747	.6284 0.2651	.3735 0.2778
.4246 0.2724	.4940 0.2702	.5678 0.2655	.6304 0.2743	.3756 0.2756
.4267 0.2694	.4963 0.2624	.5699 0.2702	.6323 0.2742	.3779 0.2701
.4291 0.2660	.4991 0.2672	.5720 0.2742	.6343 0.2675	.3854 0.2602
.4314 0.2688	.5097 0.2734	.5743 0.2761	.6363 0.2758	.3875 0.2637
.4340 0.2654	.5119 0.2702	.5763 0.2712	.6384 0.2703	.3910 0.2637
.4362 0.2667	.5140 0.2686	.5785 0.2786	.6404 0.2731	.3934 0.2615
.4385 0.2628	.5161 0.2712	.5807 0.2813	.6424 0.2765	.3954 0.2625
.4407 0.2673	.5183 0.2702	.5829 0.2795	.6445 0.2732	.3977 0.2568
.4428 0.2650	.5210 0.2730	.5855 0.2787	.6467 0.2704	.4005 0.2700
.4451 0.2669	.5232 0.2720	.5877 0.2776	.6487 0.2731	.4025 0.2695
.4504 0.2706	.5253 0.2698	.5900 0.2820	.6535 0.2757	.4047 0.2728
.4527 0.2721	.5274 0.2710	.5924 0.2835	.6554 0.2798	.4107 0.2754
.4551 0.2817	.5295 0.2775	.5946 0.2825	.6575 0.2727	.4130 0.2762
.4573 0.2739	.5316 0.2797	.5967 0.2791	.6596 0.2760	.4150 0.2811
.4596 0.2789	.5337 0.2867	.5988 0.2788	2445050 +	.4170 0.2824
.4619 0.2814	.5357 0.2816	.6009 0.2762	.3443 0.2677	.4190 0.2726
.4647 0.2739	.5378 0.2827	.6031 0.2773	.3467 0.2750	.4259 0.2636
.4669 0.2754	.5400 0.2752	.6053 0.2792	.3488 0.2788	.4330 0.2628
.4695 0.2759	.5421 0.2728	.6075 0.2784	.3509 0.2764	.4350 0.2714
.4717 0.2757	.5442 0.2766	.6095 0.2781	.3530 0.2697	.4372 0.2643
.4738 0.2796	.5464 0.2699	.6116 0.2809	.3545 0.2762	.4392 0.2708
.4759 0.2773	.5485 0.2834	.6136 0.2769	.3574 0.2773	.4412 0.2711

.4432 0.2719	.5485 0.2866	.3861 0.2690	.4720 0.2791	.4111 0.2833
.4453 0.2608	.5507 0.2905	.3878 0.2817	.4736 0.2918	.4132 0.2883
.4475 0.2663	.5527 0.2867	.3894 0.2651	.4770 0.2920	.4151 0.2918
.4496 0.2677	.5548 0.2850	.3911 0.2672	.4788 0.2891	.4156 0.2908
.4516 0.2716	.5568 0.2942	.3928 0.2669	.4805 0.2914	.4208 0.2891
.4538 0.2742	.5590 0.2919	.3945 0.2713	.4822 0.2912	.4228 0.2832
.4558 0.2757	.5610 0.2929	.3964 0.2752	.2445105 +	.4249 0.2885
.4580 0.2809	.5631 0.2919	.3981 0.2725	.3297 0.2623	.4268 0.2815
.4602 0.2778	.5650 0.2768	.3998 0.2689	.3317 0.2710	.4288 0.2818
.4624 0.2756	.5671 0.2779	.4027 0.2807	.3336 0.2744	.4307 0.2828
.4647 0.2664	.5691 0.2815	.4045 0.2814	.3364 0.2731	.4336 0.2740
.4667 0.2808	.5711 0.2824	.4061 0.2804	.3383 0.2787	.4356 0.2729
.4689 0.2871	.5732 0.2714	.4077 0.2782	.3403 0.2748	.4376 0.2651
.4710 0.2714	.5752 0.2732	.4114 0.2839	.3423 0.2751	.4396 0.2726
.4732 0.2712	.5773 0.2755	.4132 0.2886	.3443 0.2787	.4416 0.2645
.4753 0.2922	.5794 0.2716	.4149 0.2920	.3462 0.2857	.4436 0.2786
.4824 0.2852	.5816 0.2713	.4158 0.2904	.3481 0.2826	.4456 0.2639
.4847 0.2823	.5837 0.2683	.4201 0.2900	.3499 0.2865	.4482 0.2690
.4868 0.2788	.5856 0.2643	.4218 0.2910	.3520 0.2803	.4501 0.2754
.4888 0.2695	.5877 0.2674	.4234 0.2859	.3540 0.2814	.4521 0.2728
.4909 0.2798	.5897 0.2684	.4253 0.2854	.3559 0.2797	.4540 0.2757
.4932 0.2830	.5917 0.2649	.4271 0.2819	.3580 0.2833	.4560 0.2844
.4953 0.2795	.5939 0.2763	.4289 0.2806	.3597 0.2794	.4580 0.2799
.4974 0.2715	.5960 0.2719	.4307 0.2802	.3622 0.2799	.4600 0.2765
.4997 0.2784	.5981 0.2706	.4324 0.2799	.3641 0.2753	.4620 0.2801
.5020 0.2693	.6003 0.2725	.4342 0.2765	.3661 0.2782	.4659 0.2787
.5041 0.2649	.6045 0.2734	.4360 0.2735	.3680 0.2763	.4680 0.2846
.5062 0.2725	.6095 0.2738	.4377 0.2746	.3699 0.2767	.4700 0.2809
.5084 0.2677	.6117 0.2766	.4393 0.2719	.3726 0.2714	.4719 0.2899
.5105 0.2688	.6137 0.2729	.4410 0.2780	.3746 0.2788	.4739 0.2832
.5127 0.2621	.6158 0.2798	.4427 0.2670	.3765 0.2787	.4758 0.2837
.5150 0.2590	.6178 0.2734	.4445 0.2799	.3785 0.2792	.4780 0.2760
.5172 0.2625	.6199 0.2814	.4462 0.2712	.3804 0.2749	.4800 0.2926
.5193 0.2666	.6221 0.2826	.4480 0.2713	.3824 0.2767	.4820 0.2791
.5215 0.2695	.6243 0.2834	.4497 0.2682	.3843 0.2709	.4840 0.2841
.5237 0.2670	.6264 0.2798	.4515 0.2718	.3864 0.2763	.4861 0.2772
.5258 0.2670	.6287 0.2768	.4533 0.2701	.3884 0.2823	.4882 0.2761
.5279 0.2758	.6308 0.2727	.4549 0.2708	.3903 0.2777	.4903 0.2892
.5300 0.2748	.6332 0.2810	.4567 0.2772	.3923 0.2719	.4924 0.2771
.5321 0.2690	.6355 0.2869	.4583 0.2800	.3942 0.2777	.4945 0.2831
.5341 0.2743	.6379 0.2781	.4600 0.2845	.3962 0.2814	.4965 0.2842
.5362 0.2755	.2445103 +	.4618 0.2841	.3981 0.2746	.4985 0.2830
.5382 0.2758	.3768 0.2790	.4635 0.2821	.4000 0.2765	.5007 0.2854
.5403 0.2826	.3785 0.2821	.4652 0.2844	.4020 0.2768	.5029 0.2780
.5423 0.2761	.3801 0.2797	.4669 0.2858	.4053 0.2832	.5049 0.2829
.5443 0.2883	.3819 0.2723	.4686 0.2885	.4072 0.2857	.5082 0.2701
.5464 0.2822	.3845 0.2767	.4703 0.2898	.4091 0.2908	.5103 0.2724

.5131 0.2798	.4159 0.2817	.5207 0.2830	.4355 0.2829	.4409 0.2739
.5151 0.2825	.4178 0.2782	.5228 0.2883	.4375 0.2767	.4434 0.2696
.5172 0.2749	.4198 0.2716	.5249 0.2878	.4396 0.2779	.4460 0.2711
.5192 0.2785	.4219 0.2800	.5271 0.2910	.4418 0.2839	.4511 0.2715
.5214 0.2826	.4241 0.2779	.5291 0.2871	.4438 0.2851	.4542 0.2673
.5234 0.2859	.4261 0.2762	.5317 0.2823	.4458 0.2899	.4571 0.2708
.5255 0.2768	.4282 0.2792	2445107 +	.4490 0.2916	.4597 0.2748
2445106 +	.4304 0.2825	.3475 0.2775	.4511 0.2918	.4625 0.2743
.3366 0.2877	.4325 0.2748	.3496 0.2837	.4532 0.2861	.4649 0.2698
.3386 0.2767	.4345 0.2875	.3521 0.2811	.4552 0.2899	.4675 0.2730
.3406 0.2781	.4365 0.2827	.3542 0.2824	.4573 0.2885	.4700 0.2715
.3425 0.2820	.4387 0.2773	.3562 0.2881	.4593 0.2913	.4726 0.2706
.3446 0.2791	.4407 0.2791	.3584 0.2829	.4616 0.2859	.4753 0.2744
.3464 0.2808	.4427 0.2880	.3605 0.2812	.4637 0.2763	.4780 0.2721
.3485 0.2836	.4460 0.2790	.3625 0.2856	.4659 0.2839	.4815 0.2767
.3511 0.2752	.4479 0.2726	.3646 0.2843	.4680 0.2799	.4852 0.2758
.3531 0.2790	.4498 0.2843	.3666 0.2831	.4701 0.2794	.4878 0.2714
.3550 0.2800	.4520 0.2758	.3686 0.2838	.4723 0.2781	.4906 0.2771
.3569 0.2771	.4540 0.2781	.3707 0.2843	.4744 0.2818	.4935 0.2766
.3589 0.2770	.4572 0.2722	.3729 0.2775	.4764 0.2645	.4960 0.2728
.3610 0.2723	.4591 0.2728	.3749 0.2767	.4785 0.2747	.4985 0.2771
.3629 0.2781	.4612 0.2686	.3771 0.2747	.4806 0.2714	.5010 0.2740
.3648 0.2750	.4651 0.2607	.3794 0.2768	.4827 0.2790	.5042 0.2788
.3668 0.2785	.4672 0.2601	.3815 0.2750	.4848 0.2716	.5069 0.2764
.3687 0.2783	.4702 0.2646	.3836 0.2748	.4871 0.2704	.5095 0.2731
.3707 0.2830	.4723 0.2727	.3856 0.2724	.4893 0.2786	.5123 0.2727
.3726 0.2828	.4742 0.2801	.3851 0.2679	.4914 0.2751	.5150 0.2695
.3745 0.2844	.4763 0.2798	.3904 0.2804	.4934 0.2844	.5176 0.2713
.3764 0.2815	.4785 0.2759	.3926 0.2685	.4956 0.2712	.5202 0.2730
.3783 0.2795	.4806 0.2881	.3947 0.2766	.4979 0.2707	.5231 0.2665
.3801 0.2784	.4826 0.2904	.3968 0.2754	.5001 0.2804	.5258 0.2695
.3821 0.2838	.4848 0.2892	.3990 0.2754	.5032 0.2758	.5285 0.2663
.3845 0.2755	.4868 0.2916	.4013 0.2815	.5054 0.2798	.5311 0.2653
.3874 0.2836	.4889 0.2815	.4033 0.2788	2445388 +	.5337 0.2713
.3893 0.2769	.4909 0.2945	.4057 0.2780	.4014 0.2782	.5362 0.2662
.3913 0.2705	.4929 0.2778	.4079 0.2775	.4042 0.2756	.5388 0.2723
.3932 0.2710	.4949 0.2890	.4100 0.2796	.4069 0.2774	.5416 0.2716
.3951 0.2796	.4969 0.2886	.4120 0.2798	.4096 0.2737	.5440 0.2759
.3970 0.2683	.4990 0.2775	.4141 0.2827	.4180 0.2781	.5466 0.2773
.3990 0.2668	.5012 0.2783	.4162 0.2741	.4205 0.2759	.5492 0.2747
.4017 0.2825	.5035 0.2744	.4184 0.2746	.4229 0.2775	.5522 0.2780
.4036 0.2767	.5058 0.2741	.4204 0.2684	.4256 0.2807	.5549 0.2716
.4057 0.2756	.5101 0.2780	.4225 0.2794	.4283 0.2798	.5607 0.2704
.4076 0.2739	.5122 0.2840	.4246 0.2718	.4307 0.2735	.5633 0.2636
.4096 0.2774	.5144 0.2742	.4267 0.2737	.4332 0.2748	.5658 0.2656
.4118 0.2811	.5165 0.2784	.4287 0.2732	.4358 0.2778	.5684 0.2639
.4138 0.2755	.5185 0.2876	.4327 0.2758	.4383 0.2734	.5710 0.2698

.5735 0.2641	.3791 0.2794	.5238 0.2887	.4412 0.2596	.4260 0.2771
.5762 0.2754	.3821 0.2809	.5265 0.2811	.4438 0.2612	.4284 0.2697
.5787 0.2683	.3853 0.2861	.5291 0.2838	.4462 0.2585	.4308 0.2625
.5813 0.2716	.3896 0.2903	.5317 0.2852	.4503 0.2617	.4333 0.2617
.5839 0.2737	.3925 0.2912	.5355 0.2780	.4527 0.2717	.4358 0.2667
.5867 0.2753	.3961 0.2884	.5382 0.2828	.4551 0.2793	2445470 +
.5892 0.2766	.3990 0.2862	.5411 0.2829	.4575 0.2854	.3514 0.2702
.5920 0.2739	.4020 0.2869	.5436 0.2801	.4599 0.2880	.3537 0.2754
.5947 0.2718	.4049 0.2854	.5464 0.2802	.4663 0.2765	.3560 0.2759
.5972 0.2758	.4077 0.2854	.5490 0.2792	.4690 0.2763	.3583 0.2819
.5998 0.2736	.4106 0.2816	.5514 0.2830	.4714 0.2741	.3643 0.2759
.6024 0.2765	.4135 0.2784	.5569 0.2744	.4738 0.2744	.3666 0.2876
.6051 0.2756	.4164 0.2788	.5595 0.2783	2445468 +	.3689 0.2829
.6075 0.2732	.4206 0.2761	2445467 +	.3415 0.2782	.3726 0.2846
.6107 0.2755	.4235 0.2782	.3573 0.2760	.3439 0.2767	.3750 0.2800
.6132 0.2762	.4267 0.2765	.3600 0.2698	.3463 0.2774	.3773 0.2821
.6157 0.2729	.4293 0.2791	.3626 0.2725	.3488 0.2776	.3798 0.2782
.6181 0.2736	.4323 0.2799	.3658 0.2701	.3511 0.2711	.3821 0.2831
.6207 0.2720	.4348 0.2778	.3682 0.2707	.3535 0.2762	.3846 0.2833
.6233 0.2722	.4378 0.2820	.3706 0.2748	.3561 0.2773	.3870 0.2826
.6258 0.2715	.4405 0.2800	.3732 0.2720	.3595 0.2706	.3893 0.2832
.6284 0.2679	.4434 0.2828	.3756 0.2680	.3618 0.2681	.3916 0.2785
.6311 0.2663	.4462 0.2808	.3805 0.2710	.3642 0.2769	.3939 0.2723
.6336 0.2688	.4502 0.2830	.3829 0.2681	.3665 0.2654	.3976 0.2747
.6361 0.2701	.4529 0.2849	.3852 0.2689	.3689 0.2682	.4003 0.2662
.6386 0.2698	.4556 0.2821	.3877 0.2673	.3712 0.2804	.4024 0.2607
.6411 0.2695	.4582 0.2826	.3904 0.2730	.3736 0.2760	.4056 0.2603
.6436 0.2774	.4609 0.2853	.3930 0.2737	.3760 0.2702	.4080 0.2584
.6461 0.2755	.4637 0.2852	.3954 0.2796	.3783 0.2762	.4103 0.2597
2445450 +	.4662 0.2856	.3978 0.2747	.3806 0.2746	2447545 +
.3272 0.2851	.4690 0.2863	.4002 0.2721	.3829 0.2775	.4810 0.2675
.3299 0.2799	.4717 0.2841	.4027 0.2710	.3853 0.2768	.4845 0.2710
.3330 0.2810	.4744 0.2809	.4052 0.2762	.3876 0.2813	.4868 0.2683
.3359 0.2837	.4789 0.2800	.4076 0.2802	.3901 0.2802	.4897 0.2668
.3386 0.2859	.4817 0.2806	.4100 0.2879	.3925 0.2778	.4918 0.2677
.3414 0.2843	.4845 0.2789	.4126 0.2777	.3948 0.2791	.4947 0.2703
.3447 0.2810	.4872 0.2779	.4151 0.2703	.3971 0.2845	.4966 0.2696
.3478 0.2794	.4899 0.2791	.4174 0.2849	.3995 0.2791	.4991 0.2738
.3506 0.2801	.4926 0.2828	.4198 0.2872	.4018 0.2820	.5012 0.2741
.3533 0.2785	.4953 0.2798	.4222 0.2797	.4042 0.2814	.5038 0.2746
.3575 0.2717	.4983 0.2830	.4246 0.2924	.4078 0.2850	.5059 0.2687
.3617 0.2692	.5013 0.2845	.4270 0.2761	.4101 0.2818	.5086 0.2740
.3644 0.2686	.5043 0.2794	.4294 0.2712	.4125 0.2821	.5109 0.2741
.3672 0.2712	.5129 0.2844	.4318 0.2834	.4148 0.2781	.5134 0.2782
.3700 0.2731	.5153 0.2858	.4342 0.2742	.4172 0.2720	.5154 0.2784
.3730 0.2751	.5183 0.2890	.4365 0.2623	.4195 0.2748	.5180 0.2762
.3760 0.2781	.5212 0.2900	.4389 0.2687	.4235 0.2734	.5200 0.2743

.5227 0.2761	.6342 0.2671	.3209 0.2785	.4152 0.2660	.5108 0.2712
.5248 0.2746	.6364 0.2682	.3236 0.2761	.4181 0.2712	.5130 0.2719
.5274 0.2726	.6389 0.2700	.3270 0.2743	.4201 0.2625	.5157 0.2743
.5295 0.2700	.6408 0.2694	.3291 0.2806	.4228 0.2616	.5180 0.2776
.5319 0.2672	.6435 0.2709	.3319 0.2787	.4252 0.2648	.5209 0.2779
.5386 0.2693	.6483 0.2777	.3340 0.2760	.4280 0.2667	2447613 +
.5415 0.2640	.6503 0.2747	.3365 0.2773	.4302 0.2670	.3046 0.2730
.5435 0.2659	.6529 0.2806	.3384 0.2746	.4327 0.2680	.3071 0.2775
.5475 0.2652	.6550 0.2819	.3412 0.2744	.4348 0.2685	.3092 0.2786
.5493 0.2625	.6576 0.2803	.3432 0.2733	.4374 0.2701	.3117 0.2809
.5522 0.2634	.6596 0.2805	.3457 0.2735	.4395 0.2692	.3137 0.2808
.5542 0.2626	.6620 0.2803	.3478 0.2775	.4422 0.2707	.3161 0.2827
.5571 0.2649	.6639 0.2830	.3511 0.2722	.4443 0.2709	.3181 0.2816
.5598 0.2649	.6668 0.2787	.3531 0.2777	.4468 0.2732	.3207 0.2753
.5625 0.2641	.6690 0.2760	.3582 0.2706	.4490 0.2686	.3227 0.2748
.5644 0.2685	.6716 0.2767	.3602 0.2676	.4517 0.2718	.3253 0.2773
.5797 0.2775	.6737 0.2714	.3629 0.2701	.4538 0.2711	.3273 0.2798
.5824 0.2768	.6763 0.2691	.3660 0.2647	.4572 0.2723	.3298 0.2744
.5845 0.2762	2447608 +	.3685 0.2653	.4607 0.2741	.3318 0.2683
.5874 0.2773	.4129 0.2705	.3705 0.2653	.4634 0.2717	.3343 0.2677
.5901 0.2772	.4210 0.2767	.3731 0.2672	.4655 0.2704	.3366 0.2669
.5929 0.2764	.4234 0.2689	.3754 0.2690	.4681 0.2701	.3392 0.2689
.5949 0.2785	.4264 0.2657	.3784 0.2708	.4724 0.2674	.3412 0.2665
.6014 0.2753	.4286 0.2727	.3803 0.2721	.4749 0.2650	.3436 0.2659
.6036 0.2718	.4311 0.2672	.3828 0.2700	.4770 0.2667	.3456 0.2640
.6065 0.2675	.4334 0.2738	.3849 0.2708	.4802 0.2657	.3482 0.2659
.6087 0.2650	.4362 0.2736	.3898 0.2738	.4823 0.2685	.3501 0.2699
.6112 0.2638	.4384 0.2699	.3918 0.2727	.4848 0.2674	.3545 0.2603
.6131 0.2617	.4411 0.2774	.3946 0.2738	.4869 0.2673	.3610 0.2666
.6157 0.2618	.4435 0.2729	.3966 0.2739	.4897 0.2690	.3635 0.2614
.6177 0.2574	.4497 0.2635	.3992 0.2722	.4918 0.2659	.3654 0.2622
.6204 0.2609	.4524 0.2654	.4012 0.2733	.4946 0.2715	.3679 0.2679
.6224 0.2596	.4551 0.2703	.4041 0.2733	.4968 0.2689	.3700 0.2704
.6252 0.2620	2447612 +	.4062 0.2700	.5001 0.2731	.3726 0.2685
.6272 0.2619	.3117 0.2719	.4086 0.2738	.5027 0.2725	.3746 0.2742
.6298 0.2662	.3157 0.2730	.4106 0.2717	.5056 0.2719	
.6317 0.2637	.3178 0.2760	.4132 0.2679	.5080 0.2754	

All the V observations from Table 8 are presented in Fig 6. The panels are chronologically arranged from the top panel of the left side to the bottom panel of the right side. The axis are the same for each panel, although there are some shorter runs and light curves with lower amplitudes. This gives an impression of the quality of the sky during observation. It nicely shows that the single night, labeled as 5450, was observed by the 1m telescope. The given night the star shows light variation of low amplitude, but it has higher quality than the other nights observed by the 50cm telescope.

In 1989 not only the generally used HR 4694 comparison star was observed, but a check star (HR 4688) was included into the observing cycle. Although, the observations

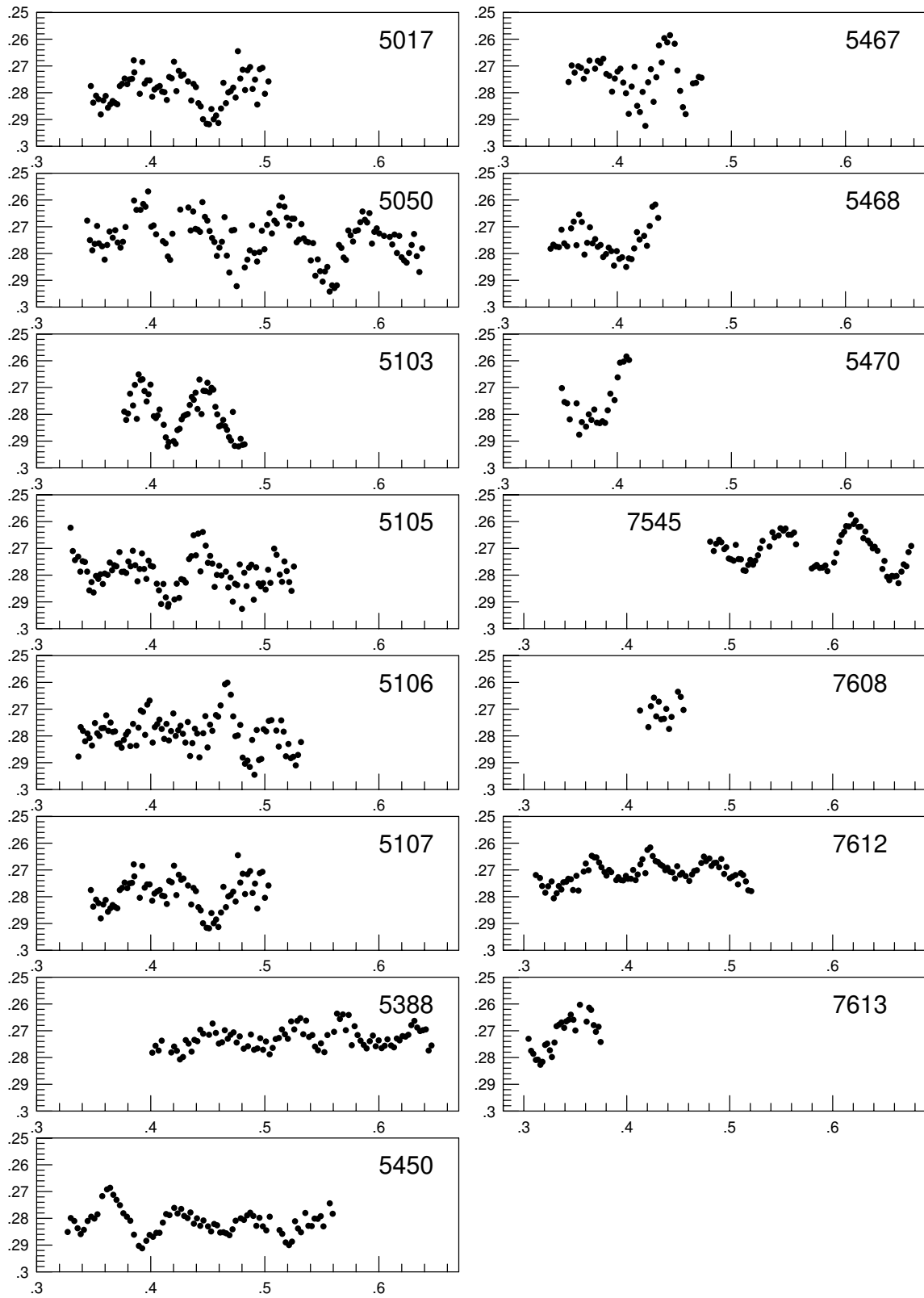


Figure 6: Light curve FM Com - HR 4694 obtained in *V* in 1982-83 and in 1989.

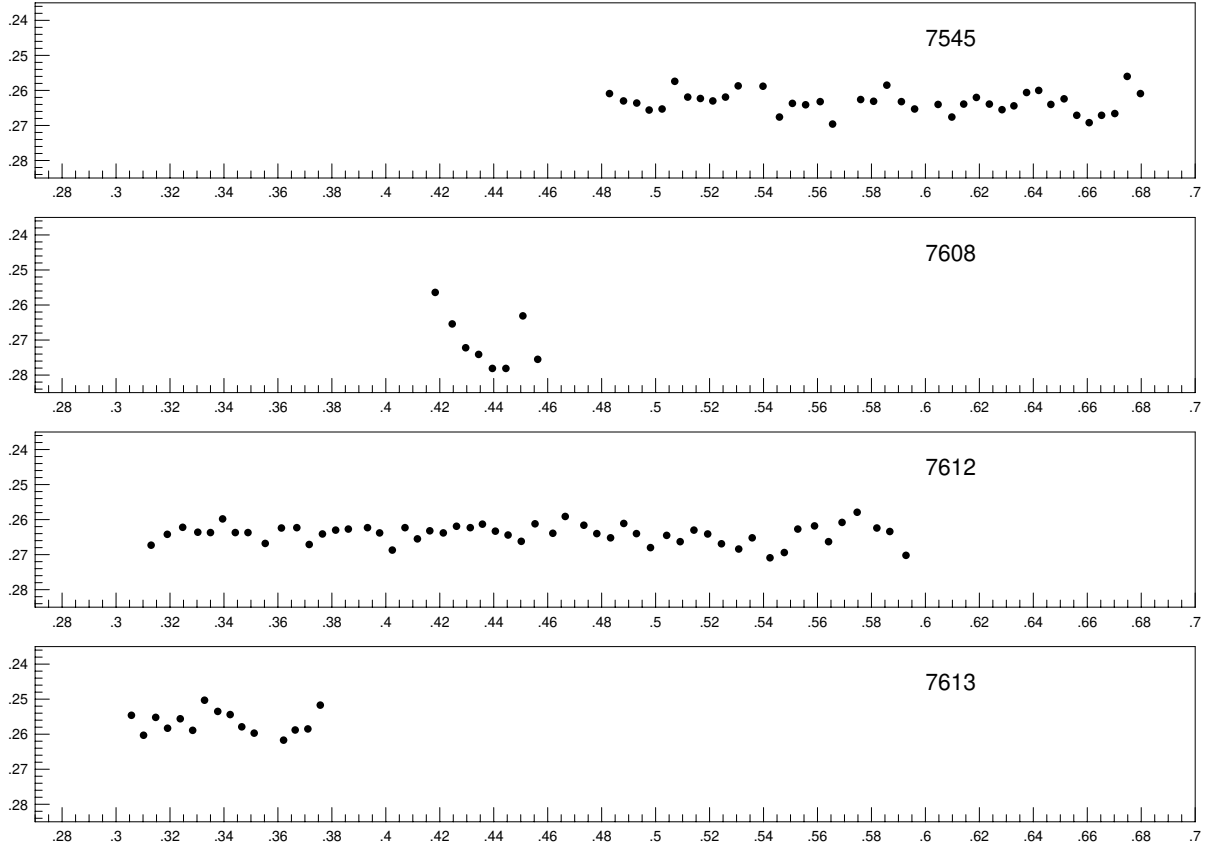


Figure 7: Relative values of comparison stars, HR 4688 - HR 4694 in Johnson V filter

are not long, they are valuable to check the constancy of the comparison stars. The light curves are given in Fig 7, while the observed data are listed in Table 9.

Table 9. Hungarian observations for HR 4688 - HR 4694 in Johnson V .

HR 4694 - HR	.5459 0.2676	.6284 0.2655	.4296 0.2722	.3553 0.2668
4688	.5507 0.2637	.6328 0.2644	.4344 0.2741	.3613 0.2624
2447545 +	.5556 0.2641	.6375 0.2606	.4395 0.2781	.3670 0.2623
.4829 0.2609	.5610 0.2632	.6420 0.2600	.4445 0.2781	.3716 0.2671
.4881 0.2630	.5656 0.2696	.6465 0.2640	.4508 0.2631	.3765 0.2641
.4930 0.2636	.5760 0.2626	.6514 0.2624	.4563 0.2755	.3814 0.2630
.4976 0.2656	.5808 0.2631	.6561 0.2671	2447612 +	.3861 0.2627
.5024 0.2653	.5857 0.2585	.6607 0.2692	.3130 0.2673	.3932 0.2623
.5071 0.2574	.5911 0.2632	.6653 0.2671	.3190 0.2642	.3977 0.2638
.5119 0.2619	.5960 0.2653	.6702 0.2666	.3247 0.2622	.4024 0.2687
.5166 0.2623	.6047 0.2640	.6748 0.2560	.3303 0.2636	.4071 0.2623
.5212 0.2630	.6098 0.2676	.6797 0.2609	.3350 0.2637	.4117 0.2655
.5259 0.2619	.6142 0.2639	2447608 +	.3395 0.2598	.4163 0.2632
.5306 0.2587	.6189 0.2620	.4183 0.2564	.3442 0.2637	.4213 0.2638
.5398 0.2588	.6237 0.2639	.4246 0.2654	.3489 0.2637	.4262 0.2619

.4313 0.2623	.4833 0.2652	.5358 0.2652	.5928 0.2702	.3423 0.2544
.4358 0.2613	.4882 0.2611	.5424 0.2709	2447613 +	.3466 0.2579
.4406 0.2633	.4929 0.2640	.5477 0.2694	.3057 0.2546	.3512 0.2597
.4453 0.2644	.4981 0.2680	.5527 0.2627	.3102 0.2603	.3621 0.2617
.4502 0.2662	.5041 0.2645	.5589 0.2618	.3147 0.2552	.3664 0.2588
.4553 0.2612	.5091 0.2663	.5641 0.2663	.3191 0.2583	.3711 0.2585
.4619 0.2639	.5142 0.2630	.5691 0.2608	.3238 0.2556	.3757 0.2517
.4665 0.2591	.5193 0.2641	.5747 0.2579	.3284 0.2589	
.4734 0.2616	.5244 0.2669	.5820 0.2624	.3328 0.2503	
.4782 0.2640	.5308 0.2684	.5868 0.2634	.3377 0.2535	

As Table 7. shows, only short runs were obtained in 1980 and 1981, but *UBV* filters were used. For showing the quality of nights and giving an impression on the colours, the light curves are displayed in a compact way in Fig 8. containing three columns. Left panels of column give the *U*, the middle ones the *B* and the right ones the *V* light curves.

The colour data are edited separately Table 10 (*U*), Table 11 (*B*) and Table 12 (*V*).

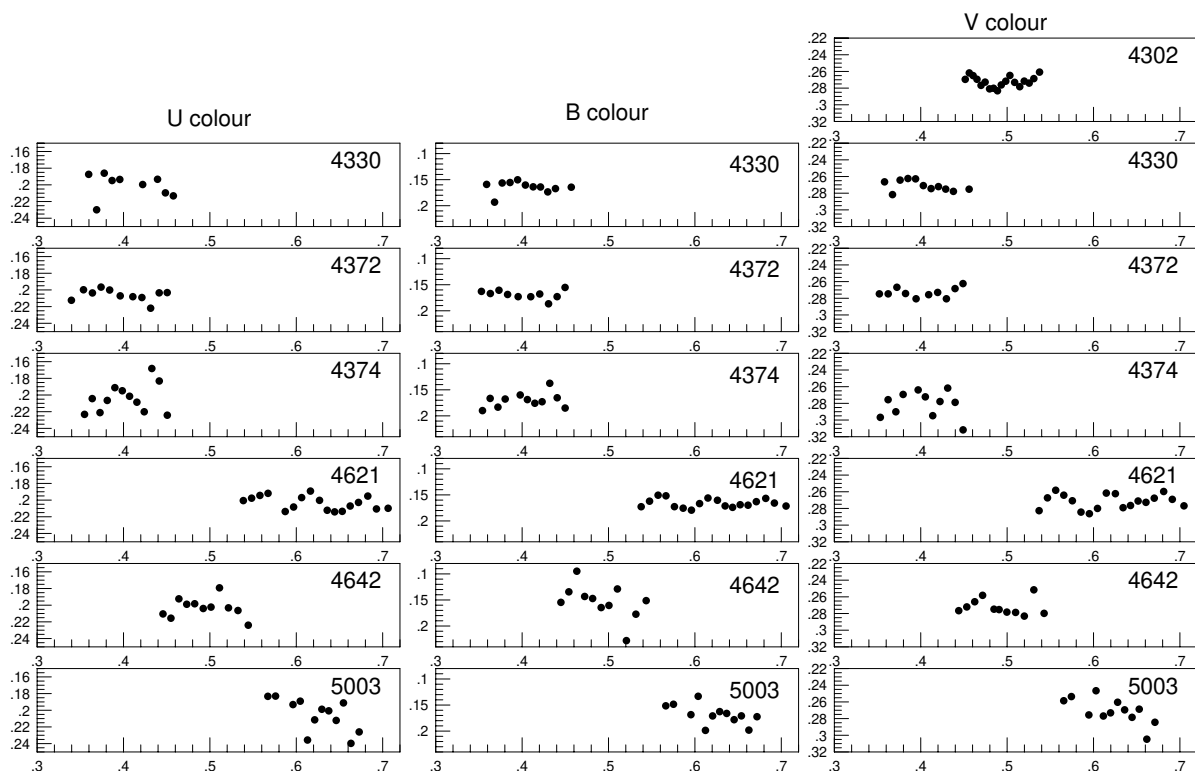


Figure 8: Light curves of early observations of FM Com - HR 4694 obtained in Hungary in *U, B, V*.

Table 10. Early Hungarian observations for FM Com - HR 4694 in Johnson *U* filter.

FM Com - HR	.3740 0.1966	.4155 0.2086	.6444 0.2141	.5215 0.2032
4694	.3840 0.2001	.4240 0.2201	.6532 0.2135	.5325 0.2064
2444330 +	.3962 0.2071	.4328 0.1682	.6624 0.2071	.5444 0.2240
.3597 0.1874	.4108 0.2081	.4414 0.1832	.6720 0.2028	2445003 +
.3689 0.2299	.4213 0.2091	.4507 0.2242	.6828 0.1952	.5671 0.1833
.3777 0.1860	.4314 0.2219	2444621 +	.6928 0.2106	.5760 0.1830
.3868 0.1948	.4413 0.2035	.5387 0.2006	.7063 0.2098	.5962 0.1932
.3957 0.1935	.4506 0.2032	.5483 0.1977	2444642 +	.6046 0.1891
.4222 0.1996	2444374 +	.5579 0.1944	.4457 0.2105	.6130 0.2357
.4394 0.1933	.3549 0.2232	.5673 0.1919	.4549 0.2156	.6213 0.2115
.4485 0.2096	.3638 0.2043	.5872 0.2137	.4641 0.1924	.6296 0.1988
.4577 0.2132	.3728 0.2211	.5969 0.2083	.4732 0.1989	.6376 0.2007
2444372 +	.3812 0.2065	.6062 0.1970	.4824 0.1983	.6462 0.2122
.3397 0.2124	.3900 0.1912	.6164 0.1892	.4923 0.2040	.6546 0.1912
.3537 0.1998	.3986 0.1949	.6269 0.2003	.5013 0.2023	.6633 0.2397
.3640 0.2036	.4070 0.2015	.6358 0.2122	.5111 0.1792	.6728 0.2260

Table 11. Early Hungarian observations for FM Com - HR 4694 in Johnson *B* filter.

FM Com - HR	.3732 0.1606	.4320 0.1375	.6615 0.1698	2445003 +
4694	.3832 0.1687	.4406 0.1653	.6711 0.1630	.5663 0.1515
2444330 +	.3954 0.1729	.4498 0.1850	.6820 0.1567	.5752 0.1485
.3589 0.1591	.4100 0.1730	2444621 +	.6920 0.1657	.5954 0.1685
.3681 0.1932	.4204 0.1678	.5378 0.1727	.7055 0.1714	.6038 0.1332
.3769 0.1564	.4306 0.1866	.5475 0.1621	2444642 +	.6122 0.1986
.3860 0.1555	.4405 0.1729	.5574 0.1506	.4449 0.1546	.6205 0.1709
.3948 0.1503	.4497 0.1552	.5665 0.1518	.4541 0.1344	.6287 0.1626
.4038 0.1604	2444374 +	.5763 0.1726	.4633 0.0948	.6368 0.1661
.4128 0.1638	.3541 0.1899	.5864 0.1755	.4724 0.1433	.6454 0.1781
.4213 0.1641	.3630 0.1665	.5960 0.1793	.4816 0.1472	.6538 0.1708
.4297 0.1735	.3720 0.1833	.6054 0.1667	.4915 0.1646	.6625 0.1981
.4386 0.1672	.3804 0.1677	.6151 0.1560	.5005 0.1605	.6719 0.1724
.4569 0.1645	.3978 0.1599	.6261 0.1603	.5103 0.1289	
2444372 +	.4061 0.1688	.6350 0.1712	.5207 0.2280	
.3529 0.1628	.4147 0.1758	.6436 0.1739	.5317 0.1773	
.3632 0.1669	.4231 0.1729	.6524 0.1689	.5436 0.1513	

Table 12. Early Hungarian observations for FM Com - HR 4694 in Johnson *V* filter.

FM Com - HR	.4698 0.2767	.5032 0.2648	2444330 +	.4120 0.2745
4694	.4745 0.2728	.5087 0.2731	.3581 0.2664	.4205 0.2721
2444302 +	.4797 0.2809	.5146 0.2783	.3673 0.2817	.4289 0.2751
.4515 0.2695	.4843 0.2802	.5198 0.2716	.3761 0.2643	.4378 0.2778
.4562 0.2618	.4888 0.2832	.5255 0.2740	.3852 0.2624	.4560 0.2752
.4606 0.2650	.4932 0.2762	.5309 0.2686	.3940 0.2628	2444372 +
.4651 0.2694	.4984 0.2717	.5375 0.2608	.4030 0.2709	.3521 0.2747

.3623 0.2747	.3796 0.2693	.5755 0.2708	.7047 0.2769	2445003 +
.3724 0.2668	.3970 0.2639	.5855 0.2844	2444642 +	.5655 0.2586
.3824 0.2743	.4053 0.2722	.5952 0.2863	.4440 0.2766	.5744 0.2536
.3946 0.2806	.4139 0.2948	.6046 0.2800	.4533 0.2721	.5946 0.2756
.4092 0.2757	.4223 0.2778	.6148 0.2616	.4625 0.2659	.6029 0.2466
.4196 0.2730	.4312 0.2617	.6253 0.2623	.4716 0.2582	.6114 0.2769
.4297 0.2806	.4398 0.2788	.6342 0.2791	.4848 0.2748	.6197 0.2731
.4397 0.2684	.4490 0.3118	.6428 0.2765	.4907 0.2753	.6279 0.2604
.4489 0.2624	2444621 +	.6516 0.2711	.4997 0.2783	.6360 0.2695
2444374 +	.5370 0.2827	.6607 0.2727	.5098 0.2787	.6446 0.2785
.3532 0.2968	.5467 0.2673	.6703 0.2677	.5199 0.2831	.6529 0.2687
.3622 0.2756	.5562 0.2582	.6812 0.2597	.5309 0.2516	.6617 0.3047
.3712 0.2901	.5656 0.2641	.6912 0.2691	.5428 0.2798	.6711 0.2844

Longer timebase with the new, space-born data would help to investigate the stability of the periods and the variability of the amplitudes. The files for the archive are: FMCom-HR4694.arch, HR4688-HR4694.arch and toredok_B.arch, toredok_U.arch and toredok_V.arch.

57 Tau

57 Tau was a selected target in a project for investigating a set of short period, low amplitude δ Scuti stars in the Hyades cluster started by Géza Kovács in the late seventies at Konkoly Observatory, however, he changed his interest to the modelling of RR Lyrae stars. I started my compact observations on 57 Tau at a single site in the late eighties (1986/1987). However, as in other cases, the effort on a single site was not hopeful. My approach was dual. On the one hand, I searched for previous observations and found that B. J. McNamara had an excellent set of data for 57 Tau obtained between 1981-1983. He reported only his results for the period ratio of the two frequencies of highest amplitude (McNamara, 1983), and data were not published. For my request he put his unpublished data at my disposal. On the other hand, multi-site/coordinated observations were initiated. Since δ Scuti observations were carried out in China, Mexico and Spain, and they are far away from Hungary, it was obvious to use the different sites at the same time for the same target. Chinese and Hungarian coordinated observations were carried out in 1989. Later Spanish and Mexican observations were obtained with direct overlapping. As a guest observer, I observed in Spain in 1995.

Finally, a comprehensive study of the δ Scuti star, 57 Tauri (= HR 1351) in the Hyades cluster was published by Paparó, Rodríguez, McNamara et al. (2000). The co-authors were the observers of some data sets. As in the other cases, we presented only the results of the analysis in the paper. Up to now not published or hardly available data are presented here to the astronomical community, to allow for the possibility of stability investigation. Of course, the Hungarian observations are presented, but different datasets are also included. The early data by B. J. McNamara, which has never been published, are also included with the permission of Joyce Guzik based on the approval of B. J. McNamara's family.

Table 13. Parameters of the observing runs on 57 Tau

Observer	Year	N	Hour	Filt.	No	Loc.	Tel.	Rem.
B. J. McNamara	1981-83	16	68.9	b	934	NMSU	16 inch	SS
M. Paparó	1986/87	9	34.6	V	648	Konk	50 cm	SS
Jiang Shi-yang						Xing-		
Li Zhi-Ping	1989	8	44.6	V	322	long	60 cm	H-Ch C
M. Paparó, Z. Kolláth	1989	6	25.5	V	305	Konk	50 cm	H-Ch C
E. Rodríguez								
M. Paparó								
A. Rolland	1995	9	41.7	ubvy	791	SN	0.9 m	Sp-Mex C
S. F. Gonzales-Bedolla	1995	5	12.6	uvby	157	SPM	1.5 m	Sp-Mex C

In the meantime an analysis on the Chinese campaign data was published by Fu et al. (1996) and the data were available in electronic form via ftp 130.79.128.5. There are two reasons why I included the Chinese data of the coordinated observations on 57 Tau. On the one hand, it is doubtful that the old fashion source is still available, on the other hand, the data published here are in a special format used for all the data of 57 Tau. Partly two measurements were averaged for the Chinese and Hungarian data, respectively in 1989. Comparing to their paper mentioned, two nights of short sequences were omitted from our present paper. In addition, all datasets are shifted to a common zero point.

In Table 13 the parameters of the observing runs are summarized. The headlines contain the content of the column. These are the following in details: Observers, Year of the run, N - number of nights, Hour - length of observation in hours, Filt. - the

Table 14. Distribution of data in HJD on a certain site

McNam. 81-83	Hung. 86/87	Hung. 89	Chin. 89	Span. 95	Mex. 95
HJD	HJD	HJD	HJD	HJD	HJD
2444903	2446049	2447541	2447540	2449994	2449999
4904	6693	7545	7541	9996	50000
4910	6694	7551	7542	9997	0003
4913	6722	7552	7543	9998	0004
4918	6763	7868	7544	9999	0007
4932	6764	7869	7545	50000	
4933	6765		7546	0001	
4939	6768		7547	0005	
4946	6816			0006	
4967	6832				
4995					
4996					
5016					
5014					
5338					
5339					

Table 15. Mean value of 57 Tau – HR 1358

Observations	Mean value
McNamara <i>b</i>	−0.79442
Hungarian <i>V</i>	−0.6081
Chinese <i>V</i>	−0.57106
Spanish+Mexican <i>y</i>	−0.57460
Spanish+Mexican <i>b</i>	−0.70195

Table 16. Shifts of the original observations

Subset from	Subset to	Shift
McNamara <i>b</i>	Spanish+Mexican <i>b</i>	+0.0925
McNamara <i>b</i>	Spanish+Mexican <i>y</i>	+0.2198
Hungarian <i>V</i>	Spanish+Mexican <i>y</i>	+0.03356
Chenese <i>V</i>	Spanish+Mexican <i>y</i>	−.000354

photometric system used, No - number of observation, Loc. - location of the observing run, Tel. - size of the telescope used and R - remark on the type of observing run, SS - single site or C - campaign.

Altogether 232 hours of data were obtained on 54 nights over 10 years. The detailed journal with the dates and observers are given in Paparó et al. (2000). To get an impression on the data distribution of certain sites, we summarize the HJD integer in Table 14.

Since the data were obtained at different locations with different telescopes using different photometric systems, we had to unify the different segments to get a proper, long enough data set for the investigation of the low amplitude pulsation of 57 Tau. At first the standard way of data reduction was used: extinction and light time correction. To match the different subsets, the mean value of each instrumental photometric system was applied. More details may be found in the published paper (Paparó et al, 2000), but we also included here the mean value of 57 Tau – HR 1358 for the different sites in Table 15.

As the mean value of the different datasets are different, we had to shift the data set to a common zero point. We shifted the datasets to the Spanish + Mexican *b* and *y* mean values, even the Johnson *V* observations, too. To have longer timebase in Strömgren *y* colour the *b* data of B. J. McNamara was shifted. The shifts are given in Table 16, however, in the following tables the original values in the given photometric systems are presented.

The processed data observed by McNamara in 1981-1983, by Paparó in 1986/87, by Paparó and Kolláth in 1989 and by Jiang Shi-yang and Li Zhi-ping in 1989 are given in Tables 17-20. The light curves are shown in Figures 9-12. HR 1358 was the comparison star in each run.

Table 17. Strömgren b observations of 57 Tau by B. J. McNamara (1981-1983)

57 Tau-HR	0.3605 -0.7025	2444904 +	0.3875 -0.6915	0.2938 -0.6955
1358	0.3630 -0.7035	0.2484 -0.7035	0.3898 -0.6905	0.2986 -0.6975
2444903 +	0.3653 -0.6965	0.2507 -0.6955	0.3919 -0.6955	0.3010 -0.6955
0.2462 -0.6965	0.3676 -0.7025	0.2530 -0.6985	0.3942 -0.6935	0.3038 -0.6945
0.2497 -0.6985	0.3698 -0.7025	0.2553 -0.6995	0.3964 -0.6945	0.3063 -0.6935
0.2567 -0.7025	0.3720 -0.7025	0.2582 -0.7075	0.3988 -0.6985	0.3098 -0.6975
0.2601 -0.6995	0.3743 -0.7065	0.2604 -0.7095	0.4013 -0.6985	0.3120 -0.7015
0.2640 -0.7005	0.3764 -0.7075	0.2635 -0.7085	0.4057 -0.6995	0.3146 -0.7005
0.2676 -0.7075	0.3787 -0.7075	0.2658 -0.7035	0.4080 -0.6975	0.3169 -0.7005
0.2716 -0.7055	0.3811 -0.7105	0.2719 -0.6955	0.4103 -0.6985	0.3196 -0.7025
0.2749 -0.7085	0.3843 -0.7065	0.2844 -0.6905	0.4124 -0.6945	0.3219 -0.7055
0.2781 -0.7135	0.3873 -0.7055	0.2866 -0.6945	0.4152 -0.6975	0.3248 -0.7055
0.2805 -0.7085	0.3895 -0.7005	0.2888 -0.6995	0.4179 -0.6995	0.3348 -0.7085
0.2831 -0.7115	0.3917 -0.6985	0.2911 -0.6965	0.4213 -0.7025	0.3373 -0.7085
0.2853 -0.7075	0.3939 -0.6975	0.2934 -0.6975	0.4235 -0.7035	0.3400 -0.7015
0.2877 -0.7115	0.3962 -0.6985	0.3008 -0.6995	0.4257 -0.6995	0.3423 -0.6995
0.2899 -0.7055	0.3994 -0.6985	0.3029 -0.7085	0.4282 -0.7035	0.3451 -0.6965
0.2932 -0.7035	0.4015 -0.6975	0.3051 -0.7085	0.4314 -0.7015	0.3473 -0.6985
0.2954 -0.7035	0.4039 -0.6985	0.3072 -0.7005	0.4336 -0.6975	0.3501 -0.6965
0.2978 -0.7035	0.4060 -0.6985	0.3093 -0.7025	0.4359 -0.6995	0.3523 -0.6935
0.3001 -0.6975	0.4091 -0.7055	0.3114 -0.7065	2444910 +	0.3561 -0.6945
0.3026 -0.6945	0.4112 -0.7055	0.3135 -0.7035	0.2276 -0.6945	0.3583 -0.6975
0.3048 -0.6995	0.4133 -0.7045	0.3156 -0.6945	0.2312 -0.6935	0.3611 -0.6975
0.3080 -0.6965	0.4155 -0.7055	0.3199 -0.6945	0.2276 -0.6945	0.3640 -0.6995
0.3103 -0.6965	0.4176 -0.7095	0.3221 -0.6885	0.2338 -0.6955	0.3668 -0.7005
0.3127 -0.6975	0.4197 -0.7085	0.3243 -0.6865	0.2370 -0.6935	0.3694 -0.6975
0.3158 -0.6975	0.4233 -0.7065	0.3297 -0.6895	0.2400 -0.6965	0.3723 -0.7015
0.3181 -0.7065	0.4256 -0.7065	0.3319 -0.6945	0.2443 -0.7005	0.3747 -0.7005
0.3204 -0.7075	0.4279 -0.7065	0.3340 -0.6915	0.2469 -0.6985	0.3774 -0.6975
0.3226 -0.7055	0.4306 -0.7065	0.3361 -0.6885	0.2501 -0.7005	0.3799 -0.6965
0.3247 -0.7105	0.4335 -0.7065	0.3383 -0.6915	0.2526 -0.7045	0.3826 -0.6905
0.3277 -0.7115	0.4356 -0.7075	0.3404 -0.6985	0.2569 -0.6995	0.3847 -0.6925
0.3299 -0.7085	0.4377 -0.7045	0.3426 -0.6865	0.2595 -0.6955	0.3875 -0.6955
0.3323 -0.7085	0.4400 -0.7005	0.3529 -0.6955	0.2627 -0.6955	0.3897 -0.6895
0.3347 -0.7065	0.4434 -0.7015	0.3550 -0.7015	0.2654 -0.6955	0.3927 -0.6975
0.3368 -0.6995	0.4458 -0.7005	0.3581 -0.7035	0.2687 -0.6965	0.3976 -0.6945
0.3389 -0.6985	0.4505 -0.7005	0.3604 -0.7115	0.2709 -0.7015	2444913 +
0.3411 -0.6965	0.4529 -0.7005	0.3626 -0.7115	0.2737 -0.7045	0.2314 -0.6965
0.3435 -0.6935	0.4553 -0.6985	0.3649 -0.7105	0.2760 -0.7005	0.2344 -0.6955
0.3466 -0.6955	0.4579 -0.6975	0.3670 -0.7055	0.2787 -0.7025	0.2393 -0.6985
0.3492 -0.6965	0.4600 -0.6955	0.3691 -0.7035	0.2810 -0.7005	0.2431 -0.6995
0.3514 -0.6905	0.4624 -0.6695	0.3712 -0.7005	0.2836 -0.7005	0.2468 -0.7035
0.3535 -0.6935	0.4647 -0.6955	0.3733 -0.7015	0.2858 -0.6965	0.2506 -0.7015
0.3558 -0.6955	0.4673 -0.6985	0.3767 -0.7015	0.2888 -0.6985	0.2551 -0.7015
0.3581 -0.6975	0.4701 -0.6955	0.3851 -0.6975	0.2911 -0.6965	0.2586 -0.6975

0.2620 -0.7025	0.2022 -0.6935	0.3659 -0.7055	0.2725 -0.7045	0.2287 -0.7055
0.2659 -0.6985	0.2073 -0.7025	0.3689 -0.7035	0.2760 -0.7005	0.2342 -0.7055
0.2701 -0.6945	0.2118 -0.7085	0.3721 -0.7075	0.2793 -0.7035	0.2375 -0.6975
0.2741 -0.6975	0.2152 -0.7075	0.3761 -0.7145	0.2825 -0.7045	0.2407 -0.6985
0.2774 -0.6945	0.2195 -0.7055	0.3794 -0.7145	0.2857 -0.7115	0.2440 -0.6995
0.2808 -0.6965	0.2229 -0.7055	0.3826 -0.7125	0.2921 -0.7145	0.2471 -0.6945
0.2840 -0.7015	0.2264 -0.7005	0.3857 -0.7105	0.2951 -0.7145	0.2503 -0.6955
0.2871 -0.6965	0.2305 -0.6975	0.3889 -0.7085	0.2982 -0.7105	0.2536 -0.7045
0.2910 -0.6985	0.2339 -0.7005	0.3929 -0.7055	0.3011 -0.7065	0.2568 -0.7045
0.2951 -0.6965	0.2371 -0.7035	0.3960 -0.7055	0.3043 -0.7055	0.2601 -0.7075
0.2982 -0.6935	0.2406 -0.7035	0.3991 -0.7095	0.3082 -0.7055	0.2648 -0.7095
0.3021 -0.6965	0.2450 -0.6995	0.4023 -0.7065	0.3116 -0.7065	0.2679 -0.7115
0.3053 -0.6975	0.2483 -0.6985	0.4065 -0.7055	0.3148 -0.7065	0.2713 -0.7065
0.3093 -0.7025	0.2524 -0.6995	0.4105 -0.7055	0.3182 -0.7105	0.2743 -0.7035
0.3126 -0.7025	0.2557 -0.7025	0.4138 -0.7045	0.3222 -0.7095	0.2774 -0.7055
0.3157 -0.7005	0.2591 -0.6985	0.4175 -0.7005	0.3267 -0.7155	0.2805 -0.7015
0.3190 -0.6965	0.2631 -0.7065	0.4207 -0.7035	0.3298 -0.7115	0.2836 -0.6935
0.3221 -0.6985	0.2663 -0.7115	0.4248 -0.7035	0.3330 -0.7055	0.2868 -0.6985
0.3253 -0.7005	0.2693 -0.7105	0.4279 -0.7045	0.3363 -0.7075	0.2917 -0.6995
0.3294 -0.7045	0.2723 -0.7115	0.4312 -0.7055	0.3397 -0.7065	0.2949 -0.7055
0.3324 -0.7025	0.2764 -0.7125	2444932 +	0.3431 -0.7045	0.2980 -0.7045
0.3355 -0.7025	0.2795 -0.7075	0.1774 -0.7025	0.3464 -0.7085	0.3011 -0.7065
0.3386 -0.7035	0.2827 -0.7055	0.1821 -0.7055	0.3504 -0.7165	0.3043 -0.7055
0.3425 -0.7035	0.2858 -0.6955	0.1867 -0.7115	0.3538 -0.7095	0.3075 -0.7065
0.3456 -0.6985	0.2897 -0.6905	0.1906 -0.7095	0.3573 -0.7205	0.3105 -0.7075
0.3489 -0.6985	0.2931 -0.6855	0.1941 -0.7125	0.3608 -0.7065	0.3151 -0.7005
0.3519 -0.7025	0.2961 -0.6875	0.1978 -0.7105	0.3642 -0.7025	0.3185 -0.7035
0.3552 -0.7005	0.2990 -0.6885	0.2014 -0.7065	0.3685 -0.7065	0.3215 -0.7045
0.3584 -0.6995	0.3021 -0.6895	0.2058 -0.7065	0.3728 -0.7035	0.3248 -0.7055
0.3624 -0.6975	0.3061 -0.7025	0.2096 -0.7085	0.3763 -0.7045	0.3280 -0.7045
0.3656 -0.6975	0.3092 -0.7075	0.2135 -0.7035	0.3799 -0.7065	0.3311 -0.7055
0.3689 -0.6985	0.3123 -0.7035	0.2181 -0.7005	0.3843 -0.7055	0.3342 -0.7015
0.3748 -0.7025	0.3156 -0.7105	0.2214 -0.6985	0.3879 -0.7065	0.3372 -0.6985
0.3788 -0.7035	0.3187 -0.7055	0.2245 -0.7055	0.3911 -0.7055	0.3404 -0.6975
0.3821 -0.7045	0.3220 -0.7035	0.2286 -0.7105	2444933 +	0.3435 -0.6975
0.3851 -0.7045	0.3259 -0.7035	0.2317 -0.7125	0.1872 -0.7025	0.3466 -0.6955
0.3882 -0.7045	0.3290 -0.7025	0.2353 -0.7065	0.1907 -0.7015	0.3512 -0.7025
0.3922 -0.7045	0.3321 -0.7015	0.2388 -0.7065	0.1944 -0.7005	0.3547 -0.7035
0.3952 -0.7065	0.3361 -0.7065	0.2420 -0.7045	0.1978 -0.6985	0.3579 -0.7105
0.3982 -0.7045	0.3393 -0.7125	0.2451 -0.7125	0.2020 -0.6955	0.3611 -0.7105
0.4015 -0.7005	0.3426 -0.7105	0.2491 -0.7095	0.2053 -0.6955	0.3644 -0.7105
0.4047 -0.7025	0.3465 -0.7055	0.2524 -0.7095	0.2085 -0.6905	0.3675 -0.7075
0.4086 -0.7025	0.3497 -0.7015	0.2557 -0.7115	0.2118 -0.6975	0.3707 -0.7025
0.4118 -0.7035	0.3527 -0.7005	0.2590 -0.7065	0.2149 -0.7015	0.3738 -0.6985
2444918 +	0.3565 -0.7025	0.2621 -0.6985	0.2181 -0.7035	0.3770 -0.6925
0.1955 -0.7015	0.3598 -0.6995	0.2654 -0.6985	0.2224 -0.7005	0.3800 -0.6885
0.1988 -0.7015	0.3629 -0.7065	0.2694 -0.7015	0.2256 -0.6995	0.3831 -0.6975

0.3862 -0.7015	0.2293 -0.6985	0.1095 -0.7135	0.2791 -0.7115	0.2078 -0.7065
0.3894 -0.7025	0.2300 -0.6975	0.1146 -0.7095	0.2822 -0.7055	0.2107 -0.7065
0.3926 -0.7075	0.2328 -0.7055	0.1179 -0.7035	0.2855 -0.7005	0.2136 -0.7055
0.3958 -0.7115	0.2364 -0.7095	0.1211 -0.7045	0.2889 -0.6975	0.2166 -0.7035
0.3993 -0.7135	0.2392 -0.7045	0.1243 -0.6975	0.2920 -0.7005	0.2197 -0.7025
0.4026 -0.7165	0.2419 -0.6985	0.1274 -0.6965	0.2949 -0.7025	0.2242 -0.7015
2444939 +	0.2446 -0.7035	0.1305 -0.7005	0.2979 -0.7025	0.2282 -0.6965
0.1770 -0.6965	0.2484 -0.7025	0.1335 -0.7035	0.3015 -0.7035	0.2314 -0.6935
0.1819 -0.7005	0.2512 -0.7035	0.1388 -0.7075	0.3048 -0.7035	0.2345 -0.6975
0.1853 -0.7035	0.2546 -0.7045	0.1418 -0.7085	2444995 +	2444996 +
0.1888 -0.7125	0.2575 -0.7075	0.1448 -0.7145	0.0805 -0.7065	0.0951 -0.7095
0.1930 -0.7065	0.2601 -0.7045	0.1483 -0.7145	0.0837 -0.7105	0.0982 -0.7085
0.1964 -0.7045	0.2628 -0.7025	0.1526 -0.7025	0.0876 -0.7075	0.1012 -0.7005
0.2056 -0.6975	0.2656 -0.6995	0.1555 -0.7075	0.0913 -0.7045	0.1043 -0.7025
0.2088 -0.6925	0.2689 -0.6985	0.1585 -0.6995	0.0949 -0.7005	0.1075 -0.7095
0.2119 -0.6975	0.2731 -0.6945	0.1616 -0.7005	0.0979 -0.7025	0.1107 -0.6985
0.2159 -0.6945	0.2758 -0.7005	0.1648 -0.7015	0.1009 -0.7045	0.1138 -0.6925
0.2202 -0.6965	0.2797 -0.7015	0.1678 -0.7075	0.1055 -0.6995	0.1164 -0.6965
0.2233 -0.7005	0.2825 -0.6985	0.1723 -0.7115	0.1088 -0.6995	0.1194 -0.6975
2444946 +	0.2862 -0.7025	0.1765 -0.7115	0.1118 -0.7035	0.1238 -0.7025
0.1369 -0.6985	0.2899 -0.7055	0.1804 -0.7105	0.1150 -0.6965	0.1264 -0.6925
0.1380 -0.7015	0.2952 -0.7035	0.1844 -0.7085	0.1161 -0.7015	0.1295 -0.7005
0.1441 -0.6965	0.2981 -0.7095	0.1895 -0.7015	0.1192 -0.7015	0.1344 -0.7025
0.1451 -0.7055	0.3008 -0.7065	0.1927 -0.7025	0.1222 -0.7015	0.1374 -0.7055
0.1512 -0.7115	0.3054 -0.7075	0.1959 -0.6985	0.1259 -0.6985	0.1406 -0.7085
0.1522 -0.6975	0.3082 -0.7085	0.2003 -0.6995	0.1308 -0.6935	0.1438 -0.7075
0.1534 -0.7075	0.3118 -0.7025	0.2034 -0.7045	0.1346 -0.6945	0.1469 -0.7085
0.1596 -0.7135	0.3145 -0.6995	0.2068 -0.7045	0.1387 -0.6945	0.1501 -0.7075
0.1606 -0.7125	0.3179 -0.7015	0.2101 -0.7065	0.1416 -0.6935	0.1535 -0.7015
0.1668 -0.7135	0.3207 -0.7035	0.2151 -0.7075	0.1446 -0.6975	0.1567 -0.7005
0.1677 -0.7145	0.3243 -0.7065	0.2196 -0.7055	0.1479 -0.6995	0.1597 -0.7005
0.1741 -0.7095	0.3271 -0.7095	0.2227 -0.7045	0.1516 -0.7075	0.1628 -0.6965
0.1751 -0.7105	0.3280 -0.7005	0.2261 -0.7085	0.1547 -0.7085	0.1660 -0.6995
0.1849 -0.7015	0.3315 -0.7015	0.2294 -0.7045	0.1593 -0.7115	0.1694 -0.6975
0.1882 -0.7015	0.3345 -0.6975	0.2346 -0.7065	0.1627 -0.7135	0.1727 -0.7025
0.1922 -0.7035	0.3380 -0.6975	0.2379 -0.7065	0.1661 -0.7095	0.1760 -0.6995
0.1956 -0.7015	0.3409 -0.6905	0.2412 -0.7025	0.1693 -0.7035	0.1811 -0.7015
0.1990 -0.7035	0.3443 -0.6935	0.2443 -0.7045	0.1724 -0.6965	0.1845 -0.7035
0.2018 -0.7085	0.3471 -0.6895	0.2475 -0.7015	0.1762 -0.6935	0.1880 -0.7005
0.2053 -0.7015	0.3506 -0.6925	0.2511 -0.7015	0.1799 -0.6935	0.1916 -0.7045
0.2088 -0.7055	0.3534 -0.6975	0.2543 -0.7035	0.1829 -0.6905	0.1949 -0.7065
0.2115 -0.7015	0.3564 -0.7035	0.2579 -0.6995	0.1861 -0.6935	0.1981 -0.7035
0.2142 -0.6965	0.3601 -0.7095	0.2630 -0.7075	0.1898 -0.6965	0.2011 -0.7115
0.2176 -0.6925	2444967 +	0.2663 -0.7065	0.1931 -0.7005	0.2044 -0.7045
0.2204 -0.6965	0.0992 -0.6955	0.2695 -0.7085	0.1963 -0.7015	0.2076 -0.7065
0.2240 -0.6965	0.1027 -0.7075	0.2727 -0.7155	0.1993 -0.7045	0.2122 -0.7045
0.2266 -0.6965	0.1061 -0.7135	0.2760 -0.7125	0.2041 -0.7045	0.2154 -0.6995

0.2188 -0.7005	0.1127 -0.6945	0.1142 -0.6925	0.2615 -0.7105	0.1500 -0.6945
0.2238 -0.7025	0.1135 -0.6965	0.1151 -0.6935	0.2624 -0.7095	0.1507 -0.6935
0.2273 -0.6985	0.1174 -0.6935	0.1194 -0.6965	0.2653 -0.7155	0.1540 -0.7025
0.2304 -0.7025	0.1182 -0.6965	0.1203 -0.6915	0.2661 -0.7095	0.1548 -0.7025
0.2334 -0.6965	0.1226 -0.6965	0.1246 -0.6935	0.2719 -0.7155	0.1590 -0.7015
0.2368 -0.6925	0.1234 -0.6925	0.1253 -0.6965	0.2725 -0.7085	0.1597 -0.7025
0.2400 -0.7025	0.1274 -0.6975	0.1297 -0.7025	0.2753 -0.7105	0.1630 -0.7005
2445016 +	0.1282 -0.6995	0.1304 -0.7025	0.2760 -0.7085	0.1644 -0.7005
0.1018 -0.7035	0.1324 -0.7015	0.1344 -0.7065	0.2818 -0.7055	0.1651 -0.7045
0.1047 -0.7005	0.1332 -0.7075	0.1354 -0.7055	0.2825 -0.6995	0.1692 -0.6985
0.1080 -0.7035	0.1387 -0.7035	0.1398 -0.7095	0.2855 -0.7005	0.1700 -0.7005
0.1112 -0.6955	0.1395 -0.7115	0.1406 -0.7105	0.2864 -0.7035	0.1739 -0.6965
0.1142 -0.6895	0.1440 -0.7045	0.1451 -0.7095	0.2917 -0.7005	0.1745 -0.6935
0.1186 -0.6945	0.1485 -0.6915	0.1458 -0.7125	0.2926 -0.7065	0.1780 -0.6975
0.1217 -0.6895	0.1493 -0.6945	0.1505 -0.7085	0.2955 -0.7005	0.1786 -0.6985
0.1249 -0.6965	0.1535 -0.6895	0.1513 -0.7075	0.2962 -0.7015	0.1828 -0.7025
0.1277 -0.7035	0.1543 -0.6885	0.1546 -0.7025	0.3013 -0.7005	0.1843 -0.7015
0.1306 -0.7075	0.1584 -0.6925	0.1553 -0.7015	0.3020 -0.7005	0.1897 -0.6955
0.1335 -0.7115	0.1592 -0.6925	0.1603 -0.7055	0.3049 -0.7025	0.1904 -0.6915
0.1364 -0.7115	0.1639 -0.6915	0.1621 -0.7065	0.3059 -0.7055	0.1953 -0.6905
0.1394 -0.7155	0.1647 -0.6935	0.2005 -0.7065	0.3118 -0.7055	0.1962 -0.6905
0.1424 -0.7125	0.1692 -0.6985	0.2011 -0.7085	0.3125 -0.7075	0.2009 -0.6905
0.1455 -0.7105	0.1704 -0.6975	0.2045 -0.7105	0.3154 -0.7045	0.2019 -0.6915
0.1488 -0.7055	0.1743 -0.7085	0.2052 -0.7125	0.3161 -0.7015	0.2061 -0.6945
0.1518 -0.7055	0.1750 -0.7015	0.2091 -0.7035	0.3205 -0.7005	0.2069 -0.6985
0.1547 -0.6995	0.1793 -0.6995	0.2099 -0.7075	0.3212 -0.7035	0.2114 -0.7025
0.1619 -0.6875	0.1810 -0.6965	0.2143 -0.7095	2445339 +	0.2121 -0.7045
0.1648 -0.6905	0.1864 -0.6985	0.2150 -0.7125	0.0961 -0.7015	0.2159 -0.7095
0.1676 -0.6905	0.1871 -0.7035	0.2179 -0.7105	0.0968 -0.7005	0.2167 -0.7065
0.1706 -0.6935	0.1917 -0.6995	0.2186 -0.7075	0.1009 -0.6985	0.2214 -0.7055
0.1737 -0.6975	0.1923 -0.6965	0.2212 -0.7115	0.1017 -0.6975	0.2221 -0.7035
0.1767 -0.6935	0.1971 -0.6965	0.2220 -0.7105	0.1051 -0.6995	0.2262 -0.7005
0.1818 -0.6945	0.1983 -0.7015	0.2266 -0.7055	0.1060 -0.6965	0.2270 -0.7035
0.1878 -0.6945	0.2027 -0.6915	0.2273 -0.7125	0.1103 -0.7015	0.2307 -0.6975
0.1908 -0.6975	0.2033 -0.6955	0.2305 -0.7065	0.1115 -0.7015	0.2353 -0.6955
0.1939 -0.6985	0.2082 -0.6855	0.2320 -0.7025	0.1158 -0.7085	0.2361 -0.6985
0.1969 -0.6995	2445338 +	0.2356 -0.7025	0.1206 -0.7095	0.2401 -0.6925
0.2017 -0.6945	0.0864 -0.7005	0.2363 -0.6965	0.1219 -0.7075	0.2408 -0.6945
0.2046 -0.7005	0.0872 -0.7045	0.2387 -0.7005	0.1264 -0.7055	0.2452 -0.6935
0.2082 -0.7005	0.0915 -0.7135	0.2436 -0.7005	0.1272 -0.7015	0.2460 -0.6905
0.2111 -0.7035	0.0922 -0.7155	0.2444 -0.6995	0.1342 -0.6985	0.2500 -0.6965
0.2141 -0.7015	0.0977 -0.7225	0.2470 -0.7035	0.1351 -0.6985	0.2510 -0.7025
2445021 +	0.0985 -0.7235	0.2477 -0.7045	0.1391 -0.6915	0.2565 -0.7005
0.1014 -0.7065	0.1031 -0.7155	0.2521 -0.7095	0.1399 -0.6905	0.2572 -0.7015
0.1043 -0.7085	0.1037 -0.7185	0.2528 -0.7095	0.1448 -0.6905	0.2597 -0.6995
0.1081 -0.6995	0.1090 -0.7065	0.2554 -0.7065	0.1454 -0.6945	0.2604 -0.7055
0.1088 -0.6995	0.1097 -0.6975	0.2561 -0.7075	0.1462 -0.6915	0.2644 -0.6985

0.2651 -0.7055	0.2773 -0.7005	0.2862 -0.7035	0.2952 -0.6995	0.3070 -0.6965
0.2671 -0.7025	0.2781 -0.7015	0.2890 -0.7045	0.2974 -0.6905	0.3086 -0.6915
0.2725 -0.7015	0.2799 -0.7045	0.2898 -0.6995	0.3008 -0.6925	
0.2731 -0.7015	0.2832 -0.7025	0.2917 -0.7015	0.3016 -0.6925	
0.2748 -0.7015	0.2844 -0.7015	0.2945 -0.7005	0.3036 -0.6885	

Table 18. Johnson *V* observations of 57 Tau by M. Paparó (1986/87)

57 Tau - HR	0.4029 -0.5776	0.4822 -0.5642	0.5297 -0.5679	0.6027 -0.5712
1358	0.4050 -0.5745	0.4843 -0.5620	0.5315 -0.5699	0.6044 -0.5738
2446049 +	0.4071 -0.5710	0.4868 -0.5594	0.5332 -0.5670	0.6061 -0.5699
0.3253 -0.5822	0.4092 -0.5685	0.4888 -0.5625	0.5351 -0.5694	0.6079 -0.5708
0.3275 -0.5753	0.4112 -0.5634	0.4908 -0.5709	0.5368 -0.5722	2446694 +
0.3295 -0.5796	0.4132 -0.5640	0.4931 -0.5745	0.5385 -0.5715	0.4535 -0.5702
0.3316 -0.5735	0.4152 -0.5694	0.4951 -0.5740	0.5410 -0.5687	0.4561 -0.5650
0.3338 -0.5761	0.4172 -0.5615	0.4972 -0.5780	0.5428 -0.5712	0.4587 -0.5660
0.3359 -0.5723	0.4191 -0.5642	0.4993 -0.5769	0.5446 -0.5699	0.4610 -0.5667
0.3380 -0.5727	0.4211 -0.5718	0.5013 -0.5803	0.5463 -0.5729	0.4639 -0.5722
0.3402 -0.5739	0.4231 -0.5689	0.5032 -0.5782	0.5479 -0.5758	0.4662 -0.5689
0.3423 -0.5740	0.4251 -0.5739	2446693 +	0.5504 -0.5748	0.4684 -0.5684
0.3443 -0.5727	0.4271 -0.5761	0.4767 -0.5771	0.5522 -0.5780	0.4709 -0.5716
0.3468 -0.5756	0.4293 -0.5798	0.4786 -0.5808	0.5544 -0.5769	0.4735 -0.5671
0.3491 -0.5741	0.4313 -0.5849	0.4814 -0.5795	0.5562 -0.5804	0.4759 -0.5694
0.3512 -0.5806	0.4333 -0.5763	0.4832 -0.5717	0.5579 -0.5784	0.4780 -0.5731
0.3534 -0.5750	0.4353 -0.5798	0.4860 -0.5681	0.5597 -0.5814	0.4802 -0.5702
0.3560 -0.5699	0.4373 -0.5760	0.4882 -0.5720	0.5614 -0.5766	0.4824 -0.5737
0.3576 -0.5735	0.4393 -0.5772	0.4902 -0.5706	0.5632 -0.5725	0.4846 -0.5729
0.3597 -0.5712	0.4414 -0.5778	0.4927 -0.5746	0.5650 -0.5709	0.4869 -0.5688
0.3617 -0.5680	0.4434 -0.5756	0.4944 -0.5781	0.5668 -0.5703	0.4900 -0.5723
0.3638 -0.5737	0.4457 -0.5748	0.4961 -0.5774	0.5685 -0.5699	0.4921 -0.5787
0.3659 -0.5759	0.4477 -0.5749	0.4978 -0.5748	0.5735 -0.5700	0.4955 -0.5748
0.3680 -0.5787	0.4497 -0.5746	0.4995 -0.5799	0.5753 -0.5667	0.4976 -0.5702
0.3702 -0.5776	0.4517 -0.5767	0.5022 -0.5795	0.5774 -0.5672	0.5002 -0.5709
0.3722 -0.5696	0.4540 -0.5743	0.5039 -0.5773	0.5790 -0.5687	0.5028 -0.5777
0.3744 -0.5750	0.4559 -0.5738	0.5059 -0.5739	0.5807 -0.5697	0.5049 -0.5712
0.3764 -0.5783	0.4578 -0.5745	0.5083 -0.5767	0.5824 -0.5708	0.5076 -0.5709
0.3785 -0.5840	0.4598 -0.5730	0.5100 -0.5725	0.5841 -0.5735	0.5096 -0.5776
0.3816 -0.5777	0.4619 -0.5734	0.5118 -0.5693	0.5858 -0.5767	0.5117 -0.5781
0.3835 -0.5748	0.4640 -0.5735	0.5135 -0.5723	0.5876 -0.5762	0.5138 -0.5755
0.3856 -0.5778	0.4661 -0.5720	0.5152 -0.5696	0.5895 -0.5761	0.5159 -0.5720
0.3876 -0.5900	0.4681 -0.5704	0.5171 -0.5675	0.5912 -0.5776	0.5186 -0.5729
0.3899 -0.5912	0.4701 -0.5736	0.5192 -0.5660	0.5928 -0.5742	0.5207 -0.5725
0.3921 -0.5877	0.4721 -0.5706	0.5209 -0.5664	0.5944 -0.5764	2446722 +
0.3942 -0.5775	0.4741 -0.5693	0.5227 -0.5686	0.5962 -0.5745	0.4134 -0.5797
0.3966 -0.5781	0.4762 -0.5708	0.5244 -0.5688	0.5979 -0.5726	0.4156 -0.5775
0.3987 -0.5797	0.4782 -0.5697	0.5261 -0.5651	0.5996 -0.5766	0.4178 -0.5752
0.4008 -0.5802	0.4803 -0.5658	0.5279 -0.5663	0.6011 -0.5724	0.4200 -0.5773

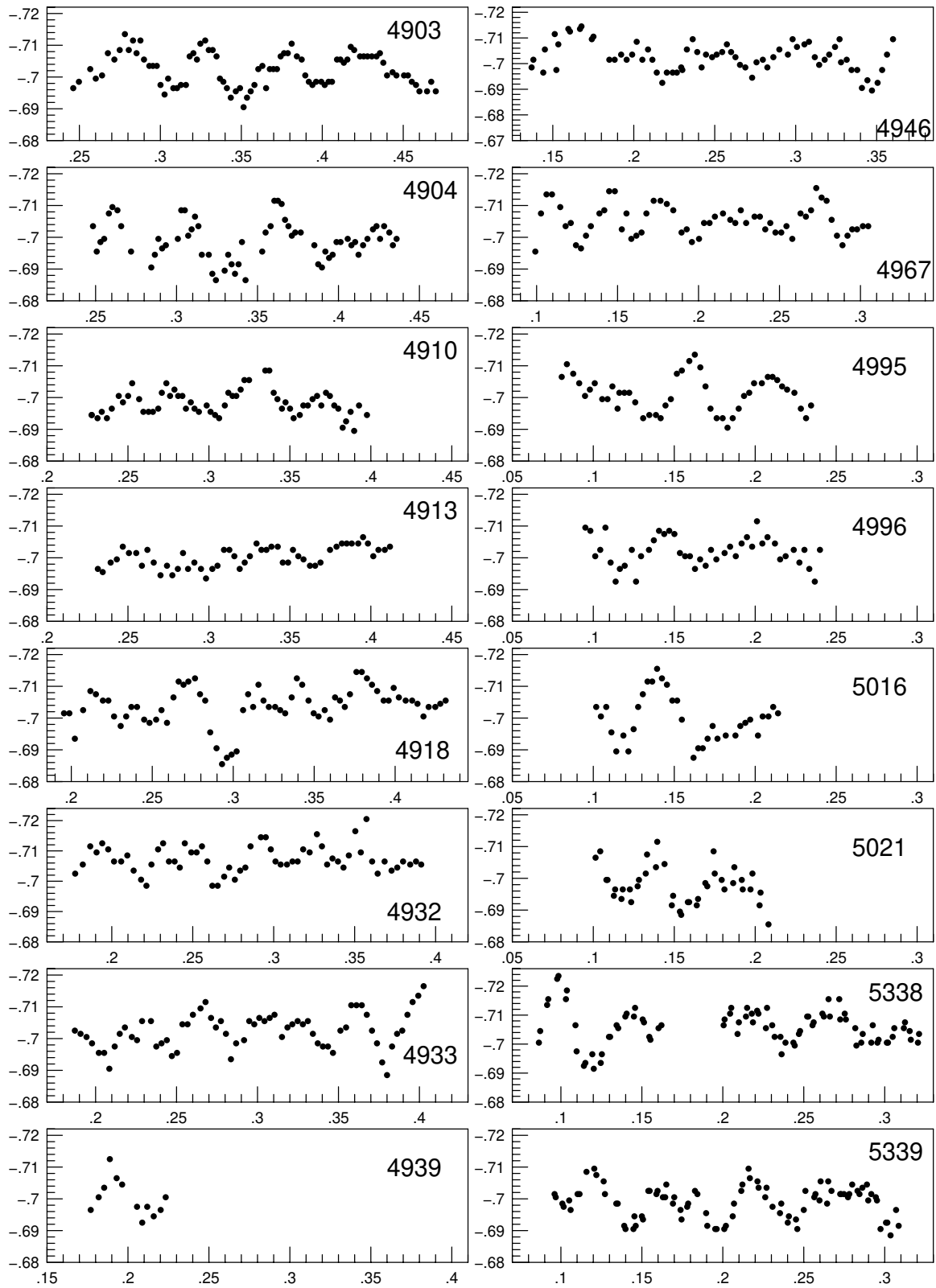


Figure 9: Light curves obtained by B. J. McNamara in 1981-1983. The filter was Strömgren b colour.

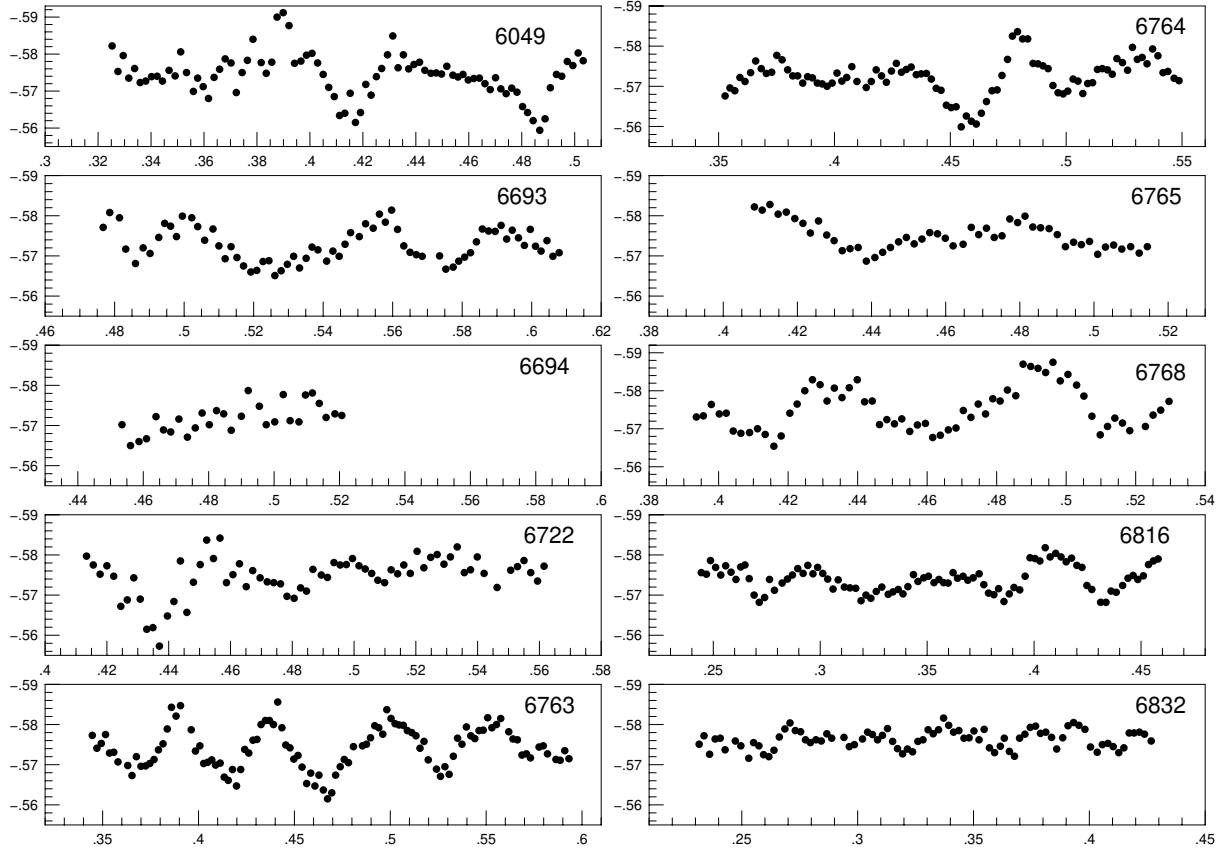


Figure 10: Light curves obtained by M. Paparó in 1986-1987. The filter was Johnson V colour.

0.4222	-0.5747	0.4629	-0.5778	0.5036	-0.5765	0.5463	-0.5719	0.3724	-0.5697
0.4245	-0.5672	0.4651	-0.5721	0.5057	-0.5754	0.5507	-0.5762	0.3746	-0.5703
0.4266	-0.5688	0.4672	-0.5761	0.5077	-0.5737	0.5529	-0.5771	0.3768	-0.5713
0.4287	-0.5743	0.4696	-0.5743	0.5099	-0.5731	0.5550	-0.5786	0.3791	-0.5737
0.4308	-0.5690	0.4719	-0.5733	0.5120	-0.5763	0.5572	-0.5756	0.3815	-0.5752
0.4329	-0.5615	0.4740	-0.5731	0.5141	-0.5753	0.5594	-0.5735	0.3837	-0.5789
0.4349	-0.5619	0.4762	-0.5728	0.5161	-0.5775	0.5615	-0.5772	0.3859	-0.5843
0.4370	-0.5573	0.4783	-0.5697	0.5182	-0.5754	2446763 +		0.3883	-0.5821
0.4396	-0.5648	0.4806	-0.5692	0.5204	-0.5809	0.3446	-0.5773	0.3906	-0.5847
0.4417	-0.5684	0.4827	-0.5718	0.5226	-0.5768	0.3470	-0.5741	0.3962	-0.5787
0.4438	-0.5785	0.4846	-0.5710	0.5248	-0.5794	0.3493	-0.5753	0.3984	-0.5734
0.4459	-0.5657	0.4867	-0.5764	0.5269	-0.5801	0.3515	-0.5775	0.4007	-0.5747
0.4480	-0.5732	0.4894	-0.5750	0.5291	-0.5777	0.3536	-0.5729	0.4027	-0.5703
0.4502	-0.5776	0.4914	-0.5744	0.5312	-0.5795	0.3558	-0.5731	0.4048	-0.5706
0.4523	-0.5837	0.4935	-0.5781	0.5334	-0.5820	0.3580	-0.5707	0.4069	-0.5712
0.4545	-0.5791	0.4955	-0.5775	0.5357	-0.5756	0.3631	-0.5698	0.4089	-0.5699
0.4566	-0.5842	0.4975	-0.5776	0.5377	-0.5763	0.3653	-0.5673	0.4113	-0.5704
0.4587	-0.5731	0.4995	-0.5791	0.5399	-0.5795	0.3676	-0.5720	0.4134	-0.5669
0.4608	-0.5751	0.5016	-0.5773	0.5421	-0.5754	0.3700	-0.5696	0.4155	-0.5661

0.4177	-0.5688	0.5241	-0.5689	0.3905	-0.5721	0.4943	-0.5702	0.4515	-0.5730
0.4198	-0.5647	0.5262	-0.5671	0.3926	-0.5708	0.4965	-0.5684	0.4536	-0.5742
0.4220	-0.5688	0.5285	-0.5695	0.3947	-0.5706	0.4987	-0.5681	0.4557	-0.5758
0.4241	-0.5738	0.5307	-0.5676	0.3968	-0.5700	0.5007	-0.5688	0.4578	-0.5755
0.4262	-0.5729	0.5329	-0.5721	0.3990	-0.5708	0.5030	-0.5718	0.4599	-0.5744
0.4284	-0.5761	0.5351	-0.5766	0.4011	-0.5733	0.5051	-0.5713	0.4620	-0.5725
0.4305	-0.5763	0.5374	-0.5751	0.4032	-0.5713	0.5072	-0.5682	0.4647	-0.5729
0.4326	-0.5800	0.5397	-0.5794	0.4053	-0.5722	0.5093	-0.5707	0.4669	-0.5771
0.4349	-0.5810	0.5420	-0.5772	0.4075	-0.5749	0.5114	-0.5709	0.4689	-0.5753
0.4370	-0.5810	0.5441	-0.5765	0.4097	-0.5712	0.5135	-0.5742	0.4710	-0.5769
0.4391	-0.5800	0.5463	-0.5785	0.4137	-0.5697	0.5156	-0.5744	0.4731	-0.5746
0.4413	-0.5856	0.5485	-0.5786	0.4159	-0.5712	0.5178	-0.5741	0.4752	-0.5750
0.4435	-0.5792	0.5508	-0.5817	0.4180	-0.5741	0.5199	-0.5730	0.4773	-0.5792
0.4455	-0.5749	0.5530	-0.5792	0.4203	-0.5726	0.5219	-0.5769	0.4794	-0.5783
0.4477	-0.5742	0.5554	-0.5800	0.4224	-0.5710	0.5243	-0.5759	0.4814	-0.5799
0.4497	-0.5714	0.5576	-0.5815	0.4246	-0.5738	0.5265	-0.5740	0.4835	-0.5772
0.4519	-0.5723	0.5618	-0.5782	0.4267	-0.5757	0.5286	-0.5797	0.4856	-0.5770
0.4540	-0.5694	0.5640	-0.5764	0.4289	-0.5735	0.5307	-0.5767	0.4879	-0.5768
0.4564	-0.5653	0.5663	-0.5762	0.4310	-0.5742	0.5328	-0.5772	0.4901	-0.5753
0.4585	-0.5679	0.5687	-0.5724	0.4331	-0.5748	0.5349	-0.5756	0.4923	-0.5723
0.4607	-0.5647	0.5710	-0.5727	0.4353	-0.5729	0.5373	-0.5793	0.4945	-0.5734
0.4628	-0.5674	0.5731	-0.5717	0.4374	-0.5731	0.5396	-0.5776	0.4966	-0.5728
0.4651	-0.5637	0.5776	-0.5744	0.4397	-0.5732	0.5418	-0.5734	0.4988	-0.5736
0.4673	-0.5615	0.5798	-0.5747	0.4418	-0.5718	0.5439	-0.5737	0.5010	-0.5704
0.4695	-0.5630	0.5820	-0.5727	0.4439	-0.5695	0.5466	-0.5720	0.5031	-0.5722
0.4715	-0.5674	0.5864	-0.5713	0.4460	-0.5690	0.5487	-0.5714	0.5053	-0.5727
0.4739	-0.5695	0.5886	-0.5711	0.4483	-0.5653	2446765 +		0.5075	-0.5717
0.4760	-0.5713	0.5910	-0.5735	0.4504	-0.5647	0.4084	-0.5822	0.5099	-0.5723
0.4782	-0.5705	0.5932	-0.5715	0.4525	-0.5649	0.4105	-0.5814	0.5122	-0.5707
0.4808	-0.5745	2446764 +		0.4547	-0.5599	0.4126	-0.5828	0.5144	-0.5723
0.4855	-0.5747	0.3528	-0.5676	0.4569	-0.5626	0.4148	-0.5804	2446768 +	
0.4876	-0.5751	0.3549	-0.5696	0.4591	-0.5613	0.4170	-0.5809	0.3936	-0.5731
0.4897	-0.5767	0.3570	-0.5689	0.4612	-0.5606	0.4193	-0.5793	0.3956	-0.5734
0.4919	-0.5797	0.3592	-0.5722	0.4634	-0.5633	0.4215	-0.5781	0.3979	-0.5764
0.4940	-0.5792	0.3614	-0.5712	0.4656	-0.5662	0.4235	-0.5757	0.4002	-0.5739
0.4961	-0.5776	0.3638	-0.5734	0.4680	-0.5689	0.4257	-0.5787	0.4022	-0.5741
0.4982	-0.5837	0.3660	-0.5763	0.4702	-0.5691	0.4279	-0.5752	0.4042	-0.5694
0.5004	-0.5815	0.3684	-0.5744	0.4723	-0.5727	0.4299	-0.5738	0.4064	-0.5688
0.5025	-0.5802	0.3706	-0.5732	0.4747	-0.5767	0.4321	-0.5713	0.4089	-0.5690
0.5046	-0.5799	0.3729	-0.5735	0.4768	-0.5825	0.4342	-0.5718	0.4112	-0.5700
0.5068	-0.5798	0.3751	-0.5777	0.4790	-0.5836	0.4364	-0.5721	0.4134	-0.5685
0.5089	-0.5785	0.3774	-0.5766	0.4812	-0.5818	0.4386	-0.5687	0.4159	-0.5654
0.5112	-0.5780	0.3798	-0.5741	0.4834	-0.5818	0.4409	-0.5696	0.4180	-0.5681
0.5134	-0.5772	0.3820	-0.5726	0.4857	-0.5757	0.4430	-0.5709	0.4205	-0.5741
0.5155	-0.5741	0.3841	-0.5726	0.4878	-0.5756	0.4451	-0.5721	0.4226	-0.5765
0.5176	-0.5758	0.3863	-0.5708	0.4900	-0.5751	0.4473	-0.5735	0.4248	-0.5800
0.5198	-0.5712	0.3884	-0.5724	0.4922	-0.5744	0.4494	-0.5746	0.4270	-0.5829

0.4292	-0.5816	0.5296	-0.5772	0.3484	-0.5743	0.4580	-0.5790	0.3349	-0.5787
0.4312	-0.5773	2446816	+	0.3506	-0.5747	2446832	+	0.3371	-0.5816
0.4333	-0.5807	0.2444	-0.5756	0.3532	-0.5731	0.2316	-0.5751	0.3393	-0.5798
0.4355	-0.5782	0.2468	-0.5752	0.3555	-0.5739	0.2337	-0.5772	0.3414	-0.5781
0.4376	-0.5808	0.2487	-0.5786	0.3577	-0.5731	0.2361	-0.5726	0.3437	-0.5785
0.4399	-0.5829	0.2511	-0.5769	0.3598	-0.5730	0.2385	-0.5764	0.3459	-0.5766
0.4420	-0.5771	0.2535	-0.5750	0.3621	-0.5756	0.2407	-0.5766	0.3481	-0.5767
0.4442	-0.5773	0.2558	-0.5773	0.3642	-0.5742	0.2428	-0.5737	0.3502	-0.5784
0.4463	-0.5711	0.2583	-0.5757	0.3668	-0.5747	0.2472	-0.5759	0.3524	-0.5762
0.4484	-0.5724	0.2606	-0.5739	0.3690	-0.5737	0.2496	-0.5747	0.3546	-0.5788
0.4506	-0.5713	0.2628	-0.5770	0.3715	-0.5743	0.2530	-0.5716	0.3569	-0.5742
0.4527	-0.5726	0.2648	-0.5775	0.3743	-0.5753	0.2551	-0.5755	0.3591	-0.5730
0.4550	-0.5693	0.2668	-0.5741	0.3765	-0.5726	0.2574	-0.5747	0.3616	-0.5746
0.4572	-0.5710	0.2691	-0.5700	0.3787	-0.5705	0.2594	-0.5725	0.3633	-0.5766
0.4595	-0.5714	0.2715	-0.5682	0.3812	-0.5701	0.2617	-0.5720	0.3655	-0.5733
0.4616	-0.5677	0.2740	-0.5694	0.3834	-0.5716	0.2639	-0.5736	0.3677	-0.5721
0.4638	-0.5683	0.2763	-0.5739	0.3859	-0.5684	0.2662	-0.5769	0.3699	-0.5766
0.4661	-0.5697	0.2786	-0.5712	0.3884	-0.5703	0.2686	-0.5789	0.3722	-0.5776
0.4683	-0.5702	0.2822	-0.5730	0.3906	-0.5719	0.2708	-0.5804	0.3745	-0.5793
0.4704	-0.5748	0.2847	-0.5740	0.3933	-0.5713	0.2731	-0.5785	0.3768	-0.5796
0.4726	-0.5730	0.2870	-0.5750	0.3958	-0.5747	0.2754	-0.5782	0.3789	-0.5778
0.4747	-0.5765	0.2895	-0.5766	0.3981	-0.5793	0.2775	-0.5762	0.3812	-0.5781
0.4768	-0.5739	0.2920	-0.5754	0.4004	-0.5791	0.2796	-0.5755	0.3837	-0.5768
0.4789	-0.5779	0.2942	-0.5774	0.4027	-0.5785	0.2820	-0.5762	0.3859	-0.5739
0.4810	-0.5773	0.2966	-0.5753	0.4052	-0.5818	0.2843	-0.5759	0.3885	-0.5767
0.4831	-0.5802	0.2988	-0.5769	0.4075	-0.5795	0.2867	-0.5777	0.3908	-0.5797
0.4855	-0.5787	0.3012	-0.5754	0.4101	-0.5804	0.2888	-0.5766	0.3932	-0.5805
0.4876	-0.5870	0.3035	-0.5740	0.4126	-0.5795	0.2941	-0.5768	0.3955	-0.5798
0.4898	-0.5864	0.3060	-0.5715	0.4150	-0.5783	0.2964	-0.5745	0.3981	-0.5788
0.4919	-0.5859	0.3084	-0.5738	0.4175	-0.5792	0.2986	-0.5750	0.4005	-0.5744
0.4941	-0.5848	0.3113	-0.5720	0.4200	-0.5774	0.3021	-0.5764	0.4034	-0.5731
0.4962	-0.5875	0.3139	-0.5718	0.4224	-0.5769	0.3043	-0.5781	0.4056	-0.5750
0.4983	-0.5826	0.3166	-0.5717	0.4247	-0.5724	0.3064	-0.5775	0.4080	-0.5753
0.5005	-0.5843	0.3191	-0.5686	0.4270	-0.5714	0.3086	-0.5762	0.4103	-0.5745
0.5030	-0.5815	0.3214	-0.5700	0.4311	-0.5682	0.3107	-0.5773	0.4127	-0.5730
0.5051	-0.5786	0.3237	-0.5692	0.4336	-0.5682	0.3129	-0.5790	0.4149	-0.5742
0.5074	-0.5733	0.3262	-0.5709	0.4360	-0.5710	0.3151	-0.5758	0.4172	-0.5779
0.5098	-0.5684	0.3288	-0.5720	0.4384	-0.5707	0.3172	-0.5740	0.4193	-0.5779
0.5119	-0.5706	0.3318	-0.5702	0.4414	-0.5724	0.3194	-0.5727	0.4216	-0.5781
0.5140	-0.5728	0.3340	-0.5708	0.4439	-0.5742	0.3215	-0.5739	0.4238	-0.5776
0.5162	-0.5715	0.3365	-0.5714	0.4463	-0.5749	0.3237	-0.5732	0.4267	-0.5759
0.5183	-0.5695	0.3387	-0.5703	0.4485	-0.5739	0.3260	-0.5758		
0.5228	-0.5706	0.3410	-0.5721	0.4511	-0.5748	0.3282	-0.5762		
0.5250	-0.5736	0.3436	-0.5751	0.4535	-0.5776	0.3304	-0.5787		
0.5272	-0.5749	0.3457	-0.5734	0.4558	-0.5785	0.3326	-0.5777		

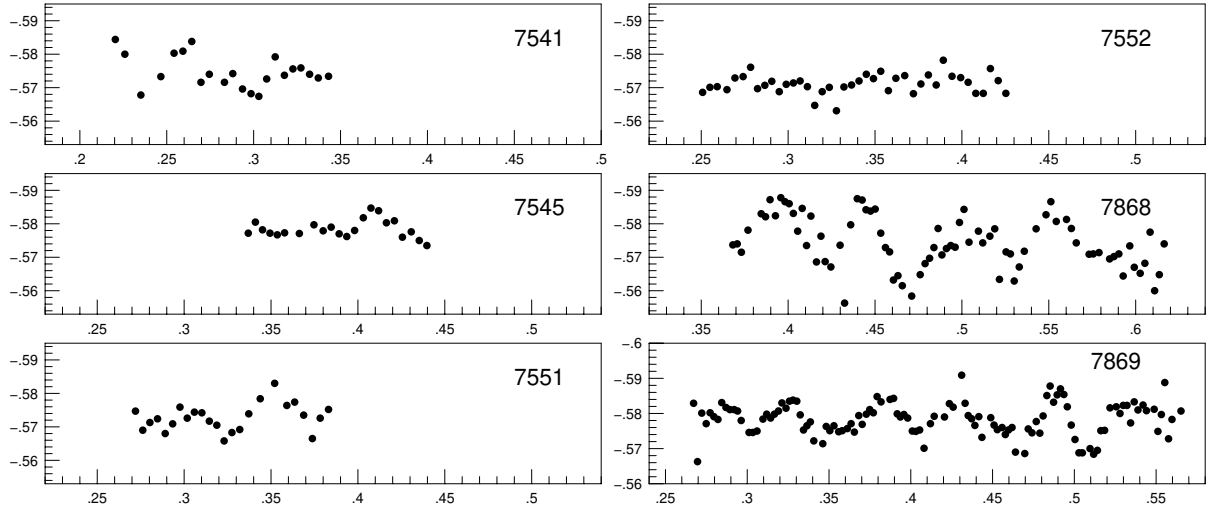


Figure 11: Light curves obtained by M. Paparó and Z. Kolláth in 1989. The filter was Johnson V colour.

Table 19. Johnson V observations of 57 Tau by M. Paparó and Z. Kolláth (1989)

57 Tau - HR	0.3410	-0.5805	0.2934	-0.5709	0.2824	-0.5697	0.3993	-0.5730
1358	0.3451	-0.5782	0.2976	-0.5759	0.2866	-0.5707	0.4036	-0.5716
2447541 +	0.3494	-0.5772	0.3018	-0.5726	0.2906	-0.5719	0.4080	-0.5683
0.2204 -0.5844	0.3536	-0.5767	0.3059	-0.5744	0.2949	-0.5688	0.4123	-0.5683
0.2259 -0.5800	0.3578	-0.5773	0.3102	-0.5742	0.2989	-0.5710	0.4164	-0.5757
0.2351 -0.5678	0.3663	-0.5771	0.3145	-0.5717	0.3030	-0.5714	0.4209	-0.5721
0.2466 -0.5733	0.3747	-0.5797	0.3188	-0.5705	0.3069	-0.5720	0.4253	-0.5683
0.2542 -0.5803	0.3800	-0.5779	0.3230	-0.5658	0.3111	-0.5703	2447868 +	
0.2593 -0.5809	0.3846	-0.5790	0.3275	-0.5683	0.3153	-0.5647	0.3682	-0.5737
0.2644 -0.5838	0.3892	-0.5770	0.3320	-0.5692	0.3196	-0.5688	0.3707	-0.5740
0.2697 -0.5716	0.3936	-0.5762	0.3372	-0.5739	0.3237	-0.5701	0.3731	-0.5715
0.2745 -0.5740	0.3981	-0.5780	0.3438	-0.5784	0.3278	-0.5631	0.3769	-0.5781
0.2832 -0.5716	0.4031	-0.5818	0.3521	-0.5830	0.3321	-0.5702	0.3845	-0.5830
0.2880 -0.5742	0.4075	-0.5847	0.3591	-0.5764	0.3365	-0.5708	0.3870	-0.5821
0.2936 -0.5696	0.4119	-0.5839	0.3636	-0.5774	0.3408	-0.5720	0.3896	-0.5872
0.2985 -0.5682	0.4164	-0.5803	0.3688	-0.5735	0.3450	-0.5740	0.3927	-0.5824
0.3030 -0.5674	0.4210	-0.5809	0.3738	-0.5665	0.3491	-0.5727	0.3958	-0.5878
0.3075 -0.5726	0.4256	-0.5760	0.3783	-0.5726	0.3533	-0.5749	0.3982	-0.5866
0.3124 -0.5792	0.4307	-0.5776	0.3831	-0.5752	0.3577	-0.5691	0.4006	-0.5860
0.3177 -0.5737	0.4353	-0.5750	2447552 +		0.3620	-0.5728	0.4030	-0.5831
0.3226 -0.5756	0.4397	-0.5735	0.2508	-0.5686	0.3671	-0.5736	0.4055	-0.5778
0.3272 -0.5759	2447551 +		0.2550	-0.5701	0.3721	-0.5682	0.4081	-0.5846
0.3322 -0.5740	0.2720	-0.5747	0.2592	-0.5703	0.3764	-0.5711	0.4106	-0.5735
0.3372 -0.5729	0.2762	-0.5690	0.2648	-0.5694	0.3807	-0.5738	0.4131	-0.5823
0.3431 -0.5734	0.2803	-0.5713	0.2694	-0.5729	0.3852	-0.5708	0.4163	-0.5686
2447545 +	0.2847	-0.5724	0.2741	-0.5733	0.3893	-0.5782	0.4189	-0.5763
0.3369 -0.5772	0.2891	-0.5680	0.2784	-0.5761	0.3943	-0.5734	0.4213	-0.5687

0.4246	-0.5671	0.5330	-0.5671	0.2941	-0.5807	0.3873	-0.5840	0.4832	-0.5851
0.4299	-0.5736	0.5359	-0.5718	0.2963	-0.5780	0.3895	-0.5843	0.4852	-0.5878
0.4325	-0.5563	0.5427	-0.5785	0.3011	-0.5746	0.3917	-0.5799	0.4873	-0.5832
0.4360	-0.5797	0.5484	-0.5827	0.3034	-0.5746	0.3936	-0.5790	0.4895	-0.5853
0.4398	-0.5875	0.5512	-0.5866	0.3060	-0.5750	0.3958	-0.5797	0.4915	-0.5870
0.4426	-0.5871	0.5543	-0.5807	0.3096	-0.5784	0.3981	-0.5787	0.4936	-0.5854
0.4448	-0.5842	0.5602	-0.5813	0.3119	-0.5798	0.4009	-0.5750	0.4957	-0.5819
0.4474	-0.5838	0.5630	-0.5786	0.3143	-0.5787	0.4031	-0.5749	0.4981	-0.5767
0.4501	-0.5844	0.5658	-0.5743	0.3166	-0.5798	0.4054	-0.5753	0.5004	-0.5726
0.4533	-0.5772	0.5732	-0.5709	0.3191	-0.5807	0.4081	-0.5701	0.5028	-0.5688
0.4560	-0.5729	0.5756	-0.5710	0.3212	-0.5830	0.4120	-0.5771	0.5049	-0.5688
0.4584	-0.5716	0.5789	-0.5714	0.3237	-0.5815	0.4143	-0.5792	0.5096	-0.5700
0.4606	-0.5632	0.5850	-0.5695	0.3258	-0.5835	0.4206	-0.5790	0.5118	-0.5684
0.4632	-0.5645	0.5875	-0.5702	0.3280	-0.5838	0.4236	-0.5828	0.5141	-0.5695
0.4657	-0.5615	0.5903	-0.5710	0.3303	-0.5835	0.4259	-0.5818	0.5162	-0.5751
0.4711	-0.5584	0.5928	-0.5644	0.3324	-0.5796	0.4311	-0.5909	0.5185	-0.5752
0.4760	-0.5648	0.5966	-0.5734	0.3344	-0.5753	0.4332	-0.5829	0.5218	-0.5816
0.4788	-0.5681	0.5992	-0.5670	0.3365	-0.5765	0.4351	-0.5794	0.5256	-0.5819
0.4814	-0.5697	0.6026	-0.5652	0.3386	-0.5776	0.4372	-0.5785	0.5279	-0.5800
0.4839	-0.5729	0.6053	-0.5682	0.3407	-0.5722	0.4392	-0.5766	0.5299	-0.5823
0.4863	-0.5786	0.6083	-0.5775	0.3462	-0.5714	0.4416	-0.5791	0.5322	-0.5823
0.4885	-0.5707	0.6109	-0.5600	0.3483	-0.5763	0.4435	-0.5732	0.5344	-0.5773
0.4911	-0.5726	0.6136	-0.5648	0.3505	-0.5751	0.4489	-0.5788	0.5366	-0.5833
0.4936	-0.5735	0.6164	-0.5740	0.3530	-0.5765	0.4509	-0.5767	0.5389	-0.5810
0.4961	-0.5730	2447869 +		0.3559	-0.5748	0.4529	-0.5754	0.5420	-0.5824
0.4986	-0.5804	0.2672	-0.5829	0.3581	-0.5751	0.4558	-0.5760	0.5441	-0.5808
0.5012	-0.5843	0.2696	-0.5663	0.3612	-0.5757	0.4578	-0.5740	0.5488	-0.5812
0.5041	-0.5745	0.2722	-0.5801	0.3635	-0.5771	0.4597	-0.5753	0.5511	-0.5749
0.5095	-0.5778	0.2749	-0.5771	0.3655	-0.5747	0.4619	-0.5760	0.5532	-0.5797
0.5120	-0.5743	0.2773	-0.5802	0.3682	-0.5794	0.4640	-0.5690	0.5553	-0.5888
0.5161	-0.5763	0.2796	-0.5791	0.3703	-0.5769	0.4697	-0.5686	0.5576	-0.5728
0.5189	-0.5785	0.2821	-0.5783	0.3728	-0.5798	0.4718	-0.5756	0.5597	-0.5783
0.5216	-0.5634	0.2844	-0.5831	0.3749	-0.5811	0.4741	-0.5745	0.5630	-0.5469
0.5254	-0.5716	0.2870	-0.5817	0.3771	-0.5802	0.4767	-0.5777	0.5652	-0.5807
0.5279	-0.5710	0.2894	-0.5811	0.3794	-0.5848	0.4789	-0.5744		
0.5301	-0.5629	0.2920	-0.5811	0.3818	-0.5833	0.4809	-0.5793		

Table 20. Johnson V observations of 57 Tau by Jiang Shi-yang and Li Zhi-ping (1989)

57 Tau -HR	0.0573	-0.5771	0.1190	-0.5855	0.1849	-0.5861	0.9444	-0.5726
1358	0.0650	-0.5765	0.1296	-0.5803	0.1927	-0.5832	0.9510	-0.5710
2447540 +	0.0726	-0.5746	0.1368	-0.5837	0.2002	-0.5752	0.9547	-0.5698
0.0153 -0.5706	0.0803	-0.5659	0.1450	-0.5829	0.2077	-0.5714	0.9609	-0.5699
0.0238 -0.5662	0.0882	-0.5683	0.1530	-0.5791	0.2156	-0.5700	0.9644	-0.5724
0.0322 -0.5692	0.0956	-0.5690	0.1613	-0.5713	0.2230	-0.5695	0.9705	-0.5743
0.0399 -0.5682	0.1036	-0.5759	0.1690	-0.5786	0.2292	-0.5780	0.9741	-0.5759
0.0483 -0.5752	0.1113	-0.5790	0.1770	-0.5853	0.9406	-0.5711	0.9810	-0.5810

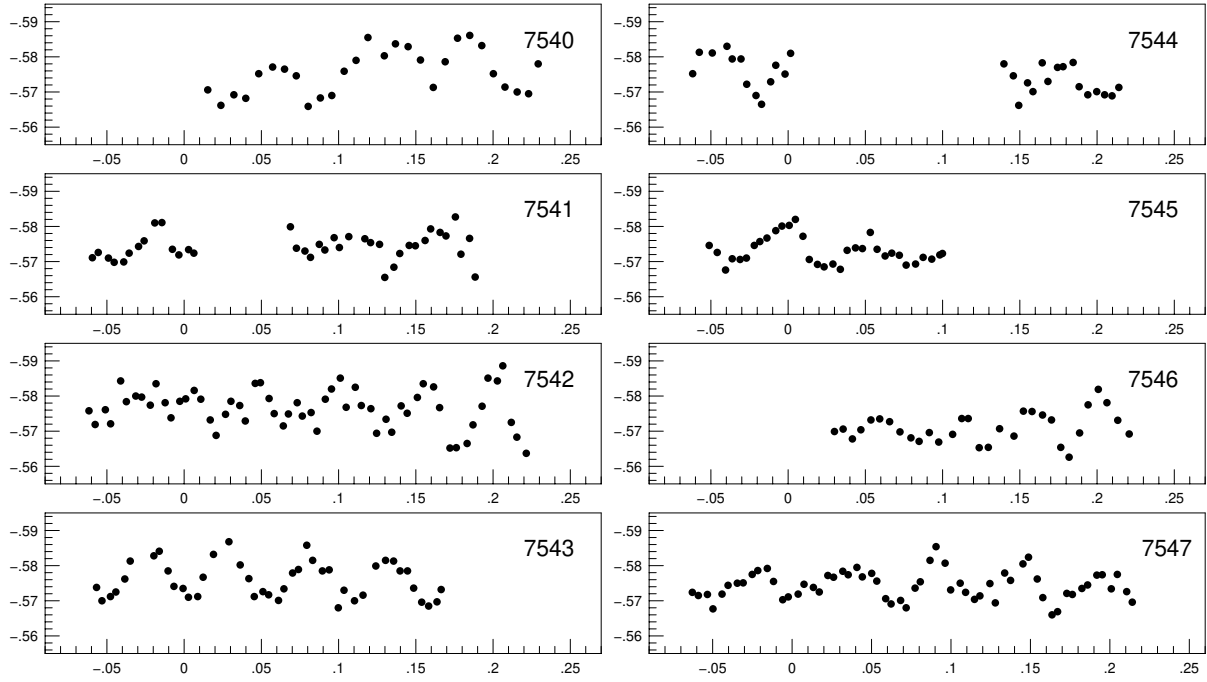


Figure 12: Light curves obtained by Jiang Shi-yang and Li Zhi-ping in China in Johnson V colour, in 1989.

0.9856 -0.5811	0.1657 -0.5783	0.0268 -0.5748	0.1444 -0.5751	0.9934 -0.5741
0.9924 -0.5735	0.1695 -0.5773	0.0303 -0.5785	0.1510 -0.5796	0.9993 -0.5735
0.9966 -0.5719	0.1756 -0.5827	0.0360 -0.5773	0.1548 -0.5835	2447543 +
2447541 +	0.1792 -0.5721	0.0396 -0.5729	0.1615 -0.5826	0.0028 -0.5710
0.0029 -0.5734	0.1848 -0.5766	0.0460 -0.5836	0.1654 -0.5767	0.0088 -0.5712
0.0063 -0.5724	0.1884 -0.5656	0.0494 -0.5838	0.1721 -0.5652	0.0123 -0.5767
0.0688 -0.5799	0.9384 -0.5758	0.0550 -0.5793	0.1762 -0.5653	0.0190 -0.5832
0.0727 -0.5738	0.9424 -0.5719	0.0583 -0.5750	0.1832 -0.5665	0.0290 -0.5868
0.0782 -0.5730	0.9490 -0.5761	0.0642 -0.5715	0.1870 -0.5718	0.0363 -0.5802
0.0818 -0.5712	0.9524 -0.5721	0.0675 -0.5749	0.1929 -0.5771	0.0419 -0.5763
0.0875 -0.5749	0.9589 -0.5843	0.0732 -0.5781	0.1967 -0.5851	0.0454 -0.5712
0.0911 -0.5733	0.9626 -0.5784	0.0765 -0.5743	0.2028 -0.5843	0.0510 -0.5726
0.0971 -0.5768	0.9687 -0.5800	0.0822 -0.5753	0.2063 -0.5886	0.0547 -0.5717
0.1005 -0.5740	0.9726 -0.5797	0.0860 -0.5700	0.2118 -0.5725	0.0611 -0.5701
0.1066 -0.5771	0.9781 -0.5774	0.0914 -0.5791	0.2154 -0.5683	0.0646 -0.5734
0.1170 -0.5765	0.9818 -0.5835	0.0954 -0.5820	0.2215 -0.5637	0.0702 -0.5779
0.1207 -0.5754	0.9877 -0.5781	0.1011 -0.5851	0.9433 -0.5738	0.0740 -0.5789
0.1265 -0.5749	0.9915 -0.5738	0.1049 -0.5768	0.9468 -0.5700	0.0794 -0.5858
0.1299 -0.5655	0.9972 -0.5785	0.1108 -0.5825	0.9523 -0.5712	0.0832 -0.5815
0.1358 -0.5684	2447542 +	0.1147 -0.5773	0.9558 -0.5725	0.0895 -0.5785
0.1396 -0.5723	0.0010 -0.5792	0.1209 -0.5764	0.9616 -0.5762	0.0939 -0.5788
0.1457 -0.5746	0.0065 -0.5816	0.1246 -0.5694	0.9651 -0.5813	0.0998 -0.5680
0.1497 -0.5745	0.0108 -0.5791	0.1307 -0.5734	0.9804 -0.5828	0.1035 -0.5730
0.1560 -0.5760	0.0169 -0.5732	0.1344 -0.5697	0.9839 -0.5841	0.1103 -0.5700
0.1596 -0.5793	0.0207 -0.5688	0.1405 -0.5772	0.9896 -0.5785	0.1158 -0.5716

0.1241 -0.5799	0.1884 -0.5715	0.0764 -0.5690	0.2008 -0.5819	0.0718 -0.5680
0.1304 -0.5815	0.1940 -0.5692	0.0825 -0.5693	0.2064 -0.5781	0.0774 -0.5736
0.1356 -0.5813	0.1998 -0.5701	0.0874 -0.5712	0.2134 -0.5731	0.0807 -0.5754
0.1398 -0.5785	0.2049 -0.5692	0.0930 -0.5707	0.2208 -0.5692	0.0868 -0.5815
0.1446 -0.5785	0.2097 -0.5689	0.0982 -0.5719	0.9372 -0.5724	0.0906 -0.5854
0.1486 -0.5736	0.2141 -0.5713	0.0999 -0.5723	0.9410 -0.5715	0.0963 -0.5807
0.1538 -0.5696	0.9489 -0.5746	2447546 +	0.9467 -0.5718	0.0998 -0.5731
0.1583 -0.5685	0.9541 -0.5726	0.0300 -0.5699	0.9502 -0.5677	0.1058 -0.5750
0.1637 -0.5697	0.9595 -0.5676	0.0356 -0.5706	0.9559 -0.5719	0.1092 -0.5724
0.1664 -0.5732	0.9638 -0.5708	0.0416 -0.5678	0.9597 -0.5744	0.1148 -0.5704
0.9382 -0.5752	0.9689 -0.5706	0.0471 -0.5704	0.9655 -0.5750	0.1182 -0.5714
0.9425 -0.5813	0.9730 -0.5710	0.0536 -0.5732	0.9692 -0.5751	0.1245 -0.5749
0.9509 -0.5811	0.9781 -0.5746	0.0593 -0.5735	0.9749 -0.5775	0.1279 -0.5694
0.9604 -0.5830	0.9817 -0.5757	0.0657 -0.5727	0.9784 -0.5786	0.1338 -0.5779
0.9638 -0.5794	0.9863 -0.5767	0.0724 -0.5698	0.9844 -0.5792	0.1375 -0.5758
0.9695 -0.5794	0.9920 -0.5788	0.0795 -0.5681	0.9883 -0.5755	0.1453 -0.5805
0.9732 -0.5722	0.9960 -0.5801	0.0848 -0.5671	0.9941 -0.5703	0.1488 -0.5824
0.9792 -0.5690	2447545 +	0.0914 -0.5696	0.9976 -0.5711	0.1543 -0.5762
0.9828 -0.5665	0.0007 -0.5803	0.0975 -0.5669	2447547 +	0.1578 -0.5709
0.9887 -0.5729	0.0047 -0.5820	0.1065 -0.5691	0.0038 -0.5719	0.1636 -0.5660
0.9920 -0.5776	0.0096 -0.5772	0.1124 -0.5736	0.0075 -0.5747	0.1671 -0.5669
0.9980 -0.5751	0.0137 -0.5706	0.1166 -0.5736	0.0134 -0.5738	0.1729 -0.5721
2447544 +	0.0190 -0.5692	0.1237 -0.5653	0.0171 -0.5725	0.1764 -0.5718
0.0016 -0.5810	0.0233 -0.5685	0.1296 -0.5654	0.0225 -0.5772	0.1824 -0.5735
0.1397 -0.5780	0.0290 -0.5693	0.1369 -0.5707	0.0261 -0.5767	0.1860 -0.5745
0.1458 -0.5746	0.0338 -0.5678	0.1462 -0.5686	0.0319 -0.5784	0.1918 -0.5773
0.1493 -0.5662	0.0382 -0.5732	0.1523 -0.5757	0.0353 -0.5774	0.1952 -0.5774
0.1550 -0.5726	0.0436 -0.5739	0.1579 -0.5756	0.0408 -0.5795	0.2009 -0.5734
0.1585 -0.5701	0.0481 -0.5737	0.1647 -0.5746	0.0442 -0.5768	0.2047 -0.5775
0.1645 -0.5783	0.0532 -0.5783	0.1705 -0.5732	0.0501 -0.5778	0.2106 -0.5726
0.1682 -0.5730	0.0576 -0.5735	0.1765 -0.5654	0.0533 -0.5756	0.2141 -0.5696
0.1744 -0.5770	0.0628 -0.5716	0.1819 -0.5626	0.0589 -0.5706	
0.1780 -0.5772	0.0671 -0.5724	0.1887 -0.5695	0.0623 -0.5691	
0.1845 -0.5784	0.0720 -0.5718	0.1942 -0.5775	0.0683 -0.5701	

In 1995 both the Spanish and Mexican runs were obtained by the 6-channel Danish photometer, so we also present here the Strömgren b , y , u , v , $b-y$, m_1 and c_1 differential values for 57 Tau – HR 1358. The data are presented in Tables 21-27. Both the Spanish and Mexican data in a given colour are included in the same tables. However, the Spanish and Mexican light curves are shown separately in Figures 13-26.

Table 21. Strömgren b observations of 57 Tau by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

57 Tau - HR	0.4989 -0.6945	0.5079 -0.6958	0.5163 -0.7011	0.5237 -0.6988
1358	0.5012 -0.6956	0.5100 -0.7004	0.5188 -0.6993	0.5276 -0.7004
2449994 +	0.5036 -0.6956	0.5135 -0.7011	0.5210 -0.7012	0.5304 -0.7011

0.5347 -0.6981	0.5402 -0.6992	0.5448 -0.6934	0.5522 -0.7010	0.5573 -0.7010
0.5365 -0.6983	0.5416 -0.6958	0.5467 -0.6979	0.5543 -0.7018	0.5589 -0.7054
0.5387 -0.6989	0.5433 -0.6930	0.5507 -0.6989	0.5558 -0.7036	0.5604 -0.7039

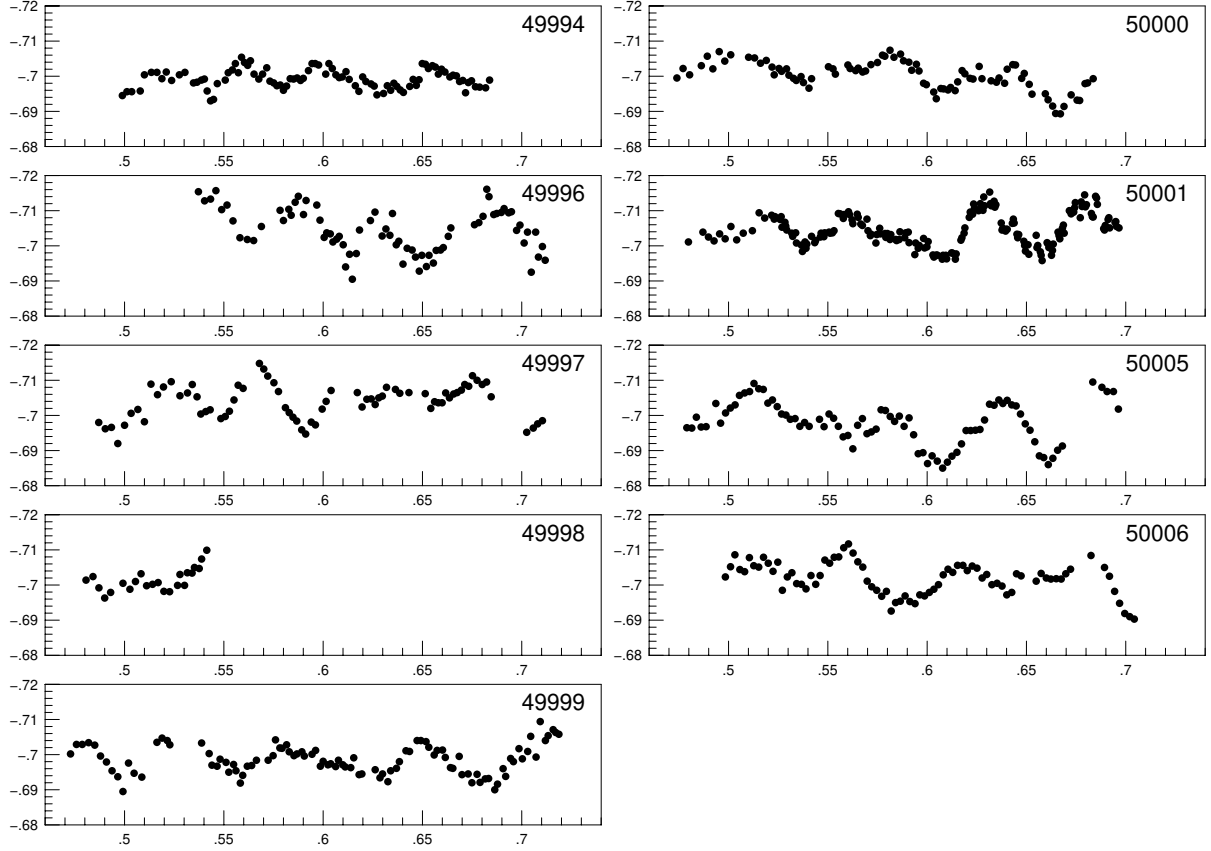


Figure 13: Light curves obtained Spain in Strömgen b colour.

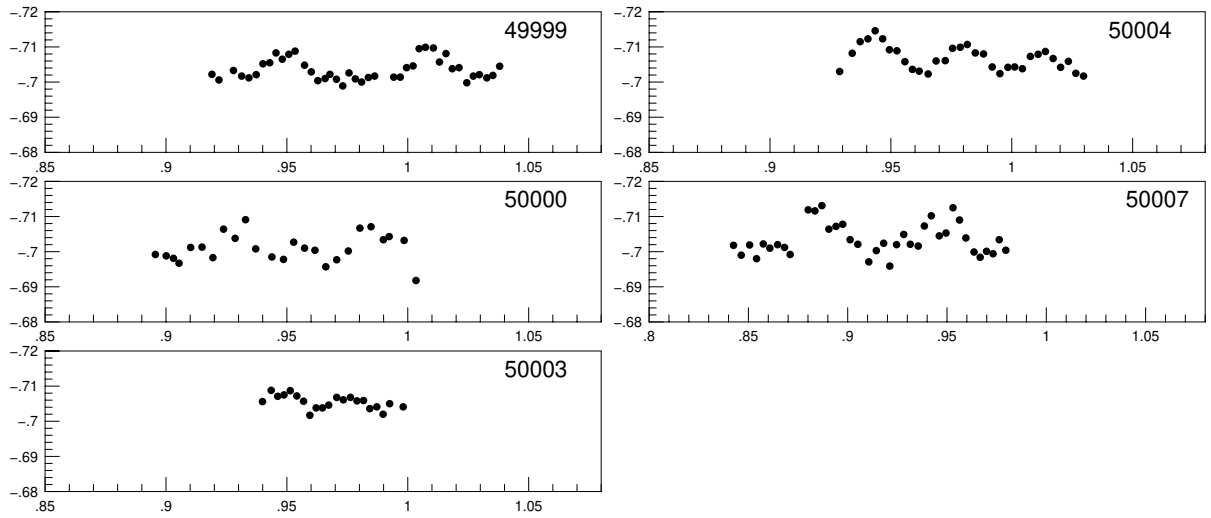


Figure 14: Light curves obtained Mexico in Strömgen b colour.

0.5620 -0.7031	0.6499 -0.7036	0.6081 -0.7027	0.7104 -0.6998	0.6242 -0.7047
0.5634 -0.7044	0.6515 -0.7034	0.6101 -0.7003	0.7118 -0.6959	0.6262 -0.7031
0.5652 -0.7006	0.6530 -0.7022	0.6113 -0.6940	2449997 +	0.6280 -0.7050
0.5676 -0.6992	0.6550 -0.7030	0.6133 -0.6976	0.4870 -0.6980	0.6298 -0.7055
0.5695 -0.7006	0.6565 -0.7026	0.6147 -0.6905	0.4903 -0.6962	0.6319 -0.7080
0.5716 -0.7024	0.6580 -0.7006	0.6167 -0.6978	0.4934 -0.6966	0.6364 -0.7074
0.5732 -0.6986	0.6596 -0.7020	0.6183 -0.7045	0.4966 -0.6920	0.6386 -0.7063
0.5751 -0.6981	0.6613 -0.7012	0.6238 -0.7072	0.5000 -0.6972	0.6432 -0.7065
0.5767 -0.6973	0.6638 -0.6998	0.6261 -0.7096	0.5033 -0.7006	0.6514 -0.7062
0.5784 -0.6975	0.6654 -0.7003	0.6297 -0.7028	0.5067 -0.7017	0.6542 -0.7020
0.5800 -0.6960	0.6671 -0.7001	0.6316 -0.7048	0.5100 -0.6982	0.6561 -0.7039
0.5816 -0.6972	0.6687 -0.6985	0.6336 -0.7030	0.5133 -0.7089	0.6580 -0.7036
0.5834 -0.6993	0.6703 -0.6988	0.6349 -0.7092	0.5166 -0.7059	0.6599 -0.7036
0.5851 -0.6992	0.6717 -0.6953	0.6368 -0.7003	0.5196 -0.7081	0.6617 -0.7064
0.5869 -0.6995	0.6731 -0.6982	0.6381 -0.7013	0.5235 -0.7096	0.6636 -0.7050
0.5886 -0.6988	0.6747 -0.6987	0.6402 -0.6948	0.5279 -0.7056	0.6657 -0.7061
0.5900 -0.6994	0.6767 -0.6970	0.6423 -0.6993	0.5317 -0.7064	0.6675 -0.7065
0.5926 -0.7016	0.6788 -0.6969	0.6448 -0.6988	0.5341 -0.7088	0.6696 -0.7072
0.5944 -0.7036	0.6818 -0.6967	0.6465 -0.6968	0.5365 -0.7053	0.6713 -0.7088
0.5960 -0.7036	0.6838 -0.6989	0.6484 -0.6928	0.5384 -0.7004	0.6733 -0.7083
0.5977 -0.7032	2449996 +	0.6497 -0.6973	0.5409 -0.7011	0.6752 -0.7113
0.6013 -0.7006	0.5372 -0.7154	0.6520 -0.6941	0.5431 -0.7016	0.6775 -0.7100
0.6029 -0.7036	0.5403 -0.7128	0.6533 -0.6973	0.5485 -0.6991	0.6801 -0.7088
0.6046 -0.7022	0.5433 -0.7133	0.6555 -0.6951	0.5507 -0.6997	0.6823 -0.7095
0.6064 -0.7004	0.5460 -0.7157	0.6569 -0.6987	0.5528 -0.7012	0.6846 -0.7053
0.6081 -0.6996	0.5489 -0.7103	0.6591 -0.6988	0.5551 -0.7044	0.7025 -0.6952
0.6096 -0.6998	0.5516 -0.7116	0.6605 -0.6995	0.5572 -0.7086	0.7058 -0.6964
0.6115 -0.7013	0.5546 -0.7071	0.6630 -0.7027	0.5597 -0.7077	0.7080 -0.6976
0.6131 -0.6991	0.5581 -0.7023	0.6643 -0.7051	0.5679 -0.7148	0.7104 -0.6985
0.6162 -0.6973	0.5618 -0.7018	0.6762 -0.706	0.5701 -0.7132	2449998 +
0.6180 -0.6957	0.5650 -0.7015	0.6784 -0.7066	0.5721 -0.7112	0.4806 -0.7014
0.6199 -0.6998	0.5689 -0.7055	0.6805 -0.7084	0.5752 -0.7093	0.4841 -0.7024
0.6215 -0.6985	0.5783 -0.7101	0.6824 -0.7161	0.5775 -0.7068	0.4871 -0.6992
0.6241 -0.6978	0.5800 -0.7072	0.6835 -0.7140	0.5810 -0.7022	0.4900 -0.6963
0.6257 -0.6972	0.5827 -0.7104	0.6859 -0.7089	0.5829 -0.7008	0.4930 -0.6979
0.6271 -0.6947	0.5839 -0.7087	0.6874 -0.7092	0.5848 -0.6995	0.4992 -0.7005
0.6304 -0.6951	0.5859 -0.7124	0.6897 -0.7095	0.5867 -0.6984	0.5027 -0.6988
0.6323 -0.6973	0.5875 -0.7141	0.6911 -0.7106	0.5892 -0.6959	0.5055 -0.7010
0.6340 -0.6960	0.5901 -0.7089	0.6934 -0.7094	0.5912 -0.6947	0.5083 -0.7032
0.6356 -0.6980	0.5914 -0.7129	0.6948 -0.7097	0.5940 -0.6981	0.5111 -0.6998
0.6371 -0.6971	0.5968 -0.7116	0.6974 -0.7044	0.5961 -0.6973	0.5141 -0.7002
0.6388 -0.6961	0.5984 -0.7073	0.6991 -0.7059	0.5995 -0.7018	0.5169 -0.7007
0.6404 -0.6954	0.6005 -0.7024	0.7012 -0.7008	0.6015 -0.7040	0.5198 -0.6982
0.6436 -0.6971	0.6018 -0.7037	0.7029 -0.7039	0.6040 -0.7071	0.5227 -0.6981
0.6453 -0.6991	0.6036 -0.7034	0.7048 -0.6925	0.6172 -0.7065	0.5267 -0.6999
0.6469 -0.6974	0.6049 -0.7011	0.7070 -0.7039	0.6196 -0.7024	0.5279 -0.7030
0.6483 -0.6990	0.6068 -0.7019	0.7084 -0.6968	0.6220 -0.7046	0.5302 -0.6999

0.5316 -0.7035	0.5893 -0.7008	0.6944 -0.6989	0.0184 -0.7038	0.5833 -0.7054
0.5340 -0.7034	0.5905 -0.6996	0.6958 -0.6980	0.0212 -0.7041	0.5866 -0.7063
0.5352 -0.7050	0.5944 -0.7001	0.6986 -0.7017	0.0244 -0.6998	0.5881 -0.7044
0.5376 -0.7047	0.5962 -0.7012	0.7003 -0.6988	0.0271 -0.7017	0.5908 -0.7040
0.5388 -0.7074	0.5986 -0.6967	0.7030 -0.7009	0.0296 -0.7021	0.5922 -0.7017
0.5414 -0.7099	0.6000 -0.6981	0.7045 -0.7052	0.0327 -0.7012	0.5946 -0.7034
249999 +	0.6024 -0.6971	0.7072 -0.6993	0.0352 -0.7019	0.5959 -0.7015
0.4728 -0.7002	0.6038 -0.6974	0.7093 -0.7094	0.0380 -0.7045	0.5982 -0.6980
0.4758 -0.7029	0.6063 -0.6966	0.7119 -0.7040	0.4740 -0.6995	0.5996 -0.6976
0.4787 -0.7029	0.6077 -0.6984	0.7133 -0.7054	0.4771 -0.7022	0.6033 -0.6955
0.4819 -0.7034	0.6099 -0.6971	0.7158 -0.7071	0.4804 -0.7004	0.6046 -0.6936
0.4850 -0.7027	0.6111 -0.6965	0.7171 -0.7063	0.4863 -0.7030	0.6069 -0.6965
0.4879 -0.6996	0.6139 -0.6963	0.7187 -0.7058	0.4893 -0.7057	0.6083 -0.6964
0.4909 -0.6979	0.6154 -0.6991	0.9190 -0.7022	0.4921 -0.7021	0.6105 -0.6961
0.4937 -0.6954	0.6181 -0.6943	0.9219 -0.7006	0.4953 -0.7070	0.6118 -0.6968
0.4966 -0.6937	0.6195 -0.6945	0.9279 -0.7033	0.4981 -0.7043	0.6141 -0.6959
0.4992 -0.6895	0.6262 -0.6957	0.9313 -0.7017	0.5011 -0.7061	0.6154 -0.6984
0.5020 -0.6976	0.6286 -0.6934	0.9343 -0.7012	0.5101 -0.7054	0.6176 -0.7016
0.5048 -0.6947	0.6299 -0.6945	0.9373 -0.7021	0.5131 -0.7052	0.6190 -0.7007
0.5087 -0.6936	0.6326 -0.6923	0.9401 -0.7052	0.5161 -0.7037	0.6216 -0.6994
0.5163 -0.7035	0.6340 -0.6954	0.9429 -0.7055	0.5190 -0.7045	0.6231 -0.6992
0.5189 -0.7047	0.6369 -0.6961	0.9455 -0.7083	0.5219 -0.7026	0.6262 -0.7028
0.5215 -0.7040	0.6384 -0.6980	0.9481 -0.7065	0.5230 -0.7004	0.6276 -0.6993
0.5228 -0.7028	0.6417 -0.7011	0.9508 -0.7079	0.5254 -0.7022	0.6322 -0.6987
0.5388 -0.7033	0.6435 -0.7009	0.9534 -0.7088	0.5267 -0.7014	0.6349 -0.6983
0.5426 -0.7003	0.6473 -0.7040	0.9573 -0.7048	0.5292 -0.7021	0.6362 -0.6995
0.5440 -0.6970	0.6492 -0.7040	0.9601 -0.7029	0.5304 -0.7003	0.6390 -0.6980
0.5466 -0.6967	0.6518 -0.7037	0.9628 -0.7004	0.5327 -0.6994	0.6403 -0.7020
0.5481 -0.6987	0.6532 -0.7021	0.9658 -0.7010	0.5341 -0.6988	0.6431 -0.7033
0.5511 -0.6978	0.6559 -0.6999	0.9678 -0.7022	0.5365 -0.6999	0.6445 -0.7032
0.5525 -0.6950	0.6574 -0.7012	0.9705 -0.7008	0.5377 -0.6982	0.6476 -0.6994
0.5549 -0.6972	0.6601 -0.7013	0.9731 -0.6989	0.5405 -0.6966	0.6489 -0.7008
0.5561 -0.6954	0.6615 -0.6992	0.9757 -0.7026	0.5418 -0.6993	0.6514 -0.6977
0.5583 -0.6919	0.6641 -0.6963	0.9783 -0.7009	0.5503 -0.7027	0.6528 -0.6949
0.5595 -0.6941	0.6653 -0.6961	0.9809 -0.7000	0.5526 -0.7021	0.6595 -0.6950
0.5618 -0.6967	0.6685 -0.6995	0.9837 -0.7013	0.5538 -0.7006	0.6609 -0.6933
0.5640 -0.6969	0.6699 -0.6943	0.9863 -0.7017	0.5601 -0.7032	0.6632 -0.6915
0.5664 -0.6984	0.6730 -0.6945	0.9942 -0.7014	0.5612 -0.7022	0.6647 -0.6894
0.5723 -0.6984	0.6749 -0.6920	0.9969 -0.7014	0.5640 -0.7016	0.6671 -0.6893
0.5748 -0.6997	0.6775 -0.6944	0.9995 -0.7041	0.5653 -0.7023	0.6689 -0.6914
0.5760 -0.7042	0.6790 -0.6921	2450000 +	0.5675 -0.7012	0.6725 -0.6947
0.5782 -0.7019	0.6816 -0.6931	0.0022 -0.7046	0.5690 -0.7015	0.6755 -0.6932
0.5793 -0.7018	0.6833 -0.6932	0.0047 -0.7095	0.5717 -0.7033	0.6768 -0.6931
0.5816 -0.7028	0.6864 -0.6900	0.0073 -0.7099	0.5750 -0.7039	0.6795 -0.6979
0.5829 -0.7008	0.6878 -0.6916	0.0106 -0.7097	0.5775 -0.7060	0.6808 -0.6981
0.5853 -0.6997	0.6906 -0.6960	0.0131 -0.7057	0.5787 -0.7057	0.6836 -0.6993
0.5868 -0.7002	0.6919 -0.6938	0.0158 -0.7081	0.5813 -0.7074	0.8956 -0.6992

0.9001	-0.6988	0.5323	-0.7027	0.5863	-0.7040	0.6377	-0.7045	0.6832	-0.7083
0.9031	-0.6981	0.5338	-0.7037	0.5887	-0.7023	0.6381	-0.7050	0.6836	-0.7082
0.9054	-0.6967	0.5342	-0.7008	0.5892	-0.7037	0.6395	-0.7042	0.6848	-0.7141
0.9102	-0.7012	0.5367	-0.7002	0.5905	-0.7039	0.6399	-0.7047	0.6853	-0.7136
0.9149	-0.7013	0.5372	-0.6984	0.5909	-0.7009	0.6403	-0.7047	0.6857	-0.7118
0.9194	-0.6983	0.5385	-0.7011	0.5938	-0.6975	0.6429	-0.7064	0.6889	-0.7049
0.9238	-0.7064	0.5390	-0.6993	0.5942	-0.7008	0.6434	-0.7076	0.6893	-0.7045
0.9286	-0.7038	0.5394	-0.7005	0.5955	-0.6993	0.6438	-0.7065	0.6897	-0.7058
0.9329	-0.7091	0.5418	-0.7027	0.5960	-0.7001	0.6452	-0.7033	0.6911	-0.7075
0.9371	-0.7008	0.5434	-0.7009	0.5982	-0.7021	0.6456	-0.7023	0.6915	-0.7080
0.9438	-0.6985	0.5438	-0.7015	0.5987	-0.6994	0.6461	-0.7032	0.6919	-0.7051
0.9486	-0.6978	0.5462	-0.7025	0.5999	-0.6997	0.6487	-0.7013	0.6946	-0.7067
0.9528	-0.7027	0.5466	-0.7036	0.6005	-0.7012	0.6491	-0.7001	0.6950	-0.7069
0.9573	-0.7010	0.5480	-0.7026	0.6029	-0.6974	0.6495	-0.6985	0.6954	-0.7055
0.9616	-0.7004	0.5484	-0.7037	0.6034	-0.6968	0.6508	-0.7003	0.6966	-0.7051
0.9661	-0.6957	0.5506	-0.7039	0.6047	-0.6974	0.6512	-0.6976	2450003	+
0.9706	-0.6977	0.5511	-0.7036	0.6052	-0.6973	0.6549	-0.7030	0.9399	-0.7056
0.9754	-0.7002	0.5523	-0.7037	0.6076	-0.6962	0.6553	-0.6995	0.9435	-0.7088
0.9802	-0.7067	0.5531	-0.7043	0.6080	-0.6973	0.6557	-0.7001	0.9462	-0.7071
0.9848	-0.7071	0.5553	-0.7092	0.6094	-0.6973	0.6570	-0.6983	0.9488	-0.7075
0.9899	-0.7034	0.5562	-0.7091	0.6098	-0.6963	0.6574	-0.6973	0.9514	-0.7087
0.9923	-0.7043	0.5578	-0.7078	0.6123	-0.6980	0.6579	-0.6958	0.9541	-0.7072
0.9985	-0.7032	0.5582	-0.7089	0.6128	-0.6979	0.6604	-0.7009	0.9569	-0.7057
2450001	+	0.5604	-0.7097	0.6142	-0.6962	0.6608	-0.7006	0.9595	-0.7017
0.0034	-0.6918	0.5609	-0.7089	0.6146	-0.6977	0.6613	-0.6995	0.9621	-0.7038
0.4798	-0.7011	0.5622	-0.7074	0.6170	-0.7016	0.6626	-0.6973	0.9647	-0.7038
0.4871	-0.7039	0.5626	-0.7063	0.6175	-0.7023	0.6631	-0.6987	0.9673	-0.7046
0.4899	-0.7025	0.5648	-0.7090	0.6186	-0.7036	0.6635	-0.7005	0.9706	-0.7068
0.4927	-0.7014	0.5653	-0.7081	0.6190	-0.7051	0.6659	-0.7039	0.9733	-0.7061
0.4955	-0.7034	0.5666	-0.7062	0.6212	-0.7081	0.6664	-0.7029	0.9763	-0.7068
0.4983	-0.7020	0.5674	-0.7058	0.6217	-0.7096	0.6668	-0.7020	0.9790	-0.7058
0.5012	-0.7055	0.5697	-0.7076	0.6229	-0.7090	0.6681	-0.7050	0.9817	-0.7059
0.5041	-0.7017	0.5702	-0.7043	0.6234	-0.7119	0.6686	-0.7059	0.9843	-0.7036
0.5074	-0.7036	0.5714	-0.7029	0.6238	-0.7106	0.6690	-0.7036	0.9872	-0.7041
0.5120	-0.7043	0.5718	-0.7033	0.6259	-0.7100	0.6716	-0.7100	0.9898	-0.7020
0.5154	-0.7094	0.5742	-0.7008	0.6263	-0.7104	0.6720	-0.7099	0.9925	-0.705
0.5182	-0.7079	0.5746	-0.7032	0.6268	-0.7120	0.6725	-0.7091	0.9981	-0.7041
0.5217	-0.7087	0.5761	-0.7050	0.6281	-0.7101	0.6738	-0.7096	2450004	+
0.5230	-0.7076	0.5765	-0.7034	0.6285	-0.7139	0.6742	-0.7108	0.9288	-0.7030
0.5234	-0.7083	0.5788	-0.7035	0.6289	-0.7114	0.6746	-0.7123	0.9340	-0.7082
0.5260	-0.7075	0.5792	-0.7024	0.6315	-0.7153	0.6771	-0.708	0.9373	-0.7115
0.5265	-0.7083	0.5800	-0.7035	0.6319	-0.7120	0.6776	-0.7125	0.9405	-0.7123
0.5269	-0.7053	0.5813	-0.7018	0.6323	-0.7114	0.6780	-0.7112	0.9435	-0.7146
0.5284	-0.7067	0.5817	-0.7032	0.6337	-0.7127	0.6793	-0.7145	0.9466	-0.7123
0.5288	-0.7056	0.5842	-0.7018	0.6341	-0.7110	0.6797	-0.7111	0.9494	-0.7092
0.5293	-0.7045	0.5846	-0.7015	0.6346	-0.7117	0.6802	-0.7117	0.9525	-0.7089
0.5318	-0.7036	0.5859	-0.7018	0.6373	-0.7065	0.6827	-0.7092	0.9558	-0.7058

0.9589 -0.7036	0.5335 -0.6991	0.6448 -0.7027	0.5676 -0.7051	0.6969 -0.6948
0.9617 -0.7031	0.5359 -0.6969	0.6470 -0.7004	0.5698 -0.7011	0.6995 -0.6919
0.9654 -0.7023	0.5383 -0.6980	0.6494 -0.6976	0.5721 -0.6995	0.7020 -0.6910
0.9687 -0.7060	0.5406 -0.6969	0.6518 -0.6958	0.5746 -0.6985	0.7043 -0.6903
0.9725 -0.7061	0.5458 -0.6989	0.6542 -0.6925	0.5771 -0.6968	2450007 +
0.9755 -0.7096	0.5481 -0.6968	0.6565 -0.6885	0.5795 -0.6982	0.8425 -0.7018
0.9787 -0.7099	0.5506 -0.7004	0.6587 -0.6880	0.5819 -0.6926	0.8464 -0.6990
0.9816 -0.7107	0.5529 -0.6992	0.6610 -0.6860	0.5841 -0.6950	0.8506 -0.7019
0.9849 -0.7083	0.5553 -0.6969	0.6633 -0.6878	0.5865 -0.6954	0.8541 -0.6980
0.9883 -0.7080	0.5577 -0.6939	0.6657 -0.6901	0.5889 -0.6969	0.8575 -0.7022
0.9919 -0.7043	0.5601 -0.6943	0.6681 -0.6913	0.5913 -0.6953	0.8608 -0.7010
0.9951 -0.7024	0.5626 -0.6905	0.6834 -0.7095	0.5939 -0.6947	0.8647 -0.7020
0.9984 -0.7042	0.5650 -0.6972	0.6880 -0.7080	0.5963 -0.6972	0.8682 -0.7012
2450005 +	0.5674 -0.6991	0.6906 -0.7068	0.5987 -0.6969	0.8710 -0.6992
0.0012 -0.7043	0.5697 -0.6948	0.6938 -0.7068	0.6011 -0.6979	0.8801 -0.7119
0.0044 -0.7038	0.5719 -0.6953	0.6963 -0.7018	0.6034 -0.6988	0.8835 -0.7116
0.0077 -0.7073	0.5743 -0.6961	2450006 +	0.6057 -0.7001	0.8870 -0.7131
0.0109 -0.7079	0.5768 -0.7016	0.4984 -0.7023	0.6081 -0.7029	0.8905 -0.7064
0.0139 -0.7087	0.5790 -0.7014	0.5010 -0.7052	0.6105 -0.7045	0.8941 -0.7072
0.0171 -0.7067	0.5814 -0.6997	0.5032 -0.7086	0.6129 -0.7036	0.8975 -0.7078
0.0202 -0.7042	0.5836 -0.6983	0.5057 -0.7044	0.6153 -0.7056	0.9012 -0.7034
0.0234 -0.7059	0.5860 -0.6998	0.5081 -0.7038	0.6180 -0.7056	0.9051 -0.7021
0.0265 -0.7025	0.5884 -0.6969	0.5105 -0.7078	0.6202 -0.7041	0.9106 -0.6971
0.0297 -0.7017	0.5909 -0.6993	0.5127 -0.7055	0.6227 -0.7054	0.9144 -0.7003
0.4790 -0.6965	0.5932 -0.6945	0.5152 -0.7051	0.6251 -0.7048	0.9181 -0.7024
0.4815 -0.6964	0.5955 -0.6891	0.5176 -0.7079	0.6277 -0.7020	0.9212 -0.6959
0.4838 -0.6995	0.5979 -0.6894	0.5200 -0.7062	0.6300 -0.7030	0.9246 -0.7020
0.4862 -0.6967	0.6002 -0.6863	0.5224 -0.7039	0.6326 -0.7001	0.9282 -0.7049
0.4887 -0.6968	0.6025 -0.6885	0.5248 -0.7065	0.6352 -0.7005	0.9315 -0.7021
0.4936 -0.7034	0.6051 -0.6870	0.5271 -0.6985	0.6377 -0.6997	0.9355 -0.7016
0.4960 -0.6978	0.6078 -0.6850	0.5296 -0.7023	0.6401 -0.6972	0.9386 -0.7073
0.4985 -0.7007	0.6102 -0.6867	0.5319 -0.7035	0.6426 -0.6979	0.9421 -0.7102
0.5009 -0.7021	0.6125 -0.6884	0.5343 -0.7004	0.6450 -0.7032	0.9461 -0.7045
0.5033 -0.7030	0.6150 -0.6895	0.5367 -0.7002	0.6473 -0.7026	0.9495 -0.7053
0.5055 -0.7057	0.6173 -0.6919	0.5390 -0.6989	0.6549 -0.7011	0.9530 -0.7125
0.5081 -0.7064	0.6196 -0.6957	0.5415 -0.7027	0.6574 -0.7033	0.9563 -0.7090
0.5106 -0.7068	0.6219 -0.6957	0.5439 -0.7002	0.6600 -0.7020	0.9595 -0.7039
0.5128 -0.7091	0.6243 -0.6958	0.5461 -0.7027	0.6623 -0.7017	0.9636 -0.6999
0.5152 -0.7076	0.6266 -0.6960	0.5485 -0.7071	0.6650 -0.7018	0.9667 -0.6984
0.5175 -0.7074	0.6289 -0.6987	0.5509 -0.7062	0.6675 -0.7017	0.9699 -0.7001
0.5198 -0.7035	0.6314 -0.7032	0.5532 -0.7079	0.6698 -0.7032	0.9732 -0.6994
0.5221 -0.7044	0.6337 -0.7029	0.5555 -0.7080	0.6722 -0.7045	0.9763 -0.7034
0.5245 -0.7025	0.6361 -0.7044	0.5580 -0.7106	0.6825 -0.7084	0.9796 -0.7004
0.5267 -0.7004	0.6381 -0.7034	0.5604 -0.7117	0.6893 -0.7050	
0.5289 -0.7001	0.6403 -0.7043	0.5627 -0.7091	0.6918 -0.7025	
0.5311 -0.6989	0.6426 -0.7030	0.5651 -0.7066	0.6944 -0.6982	

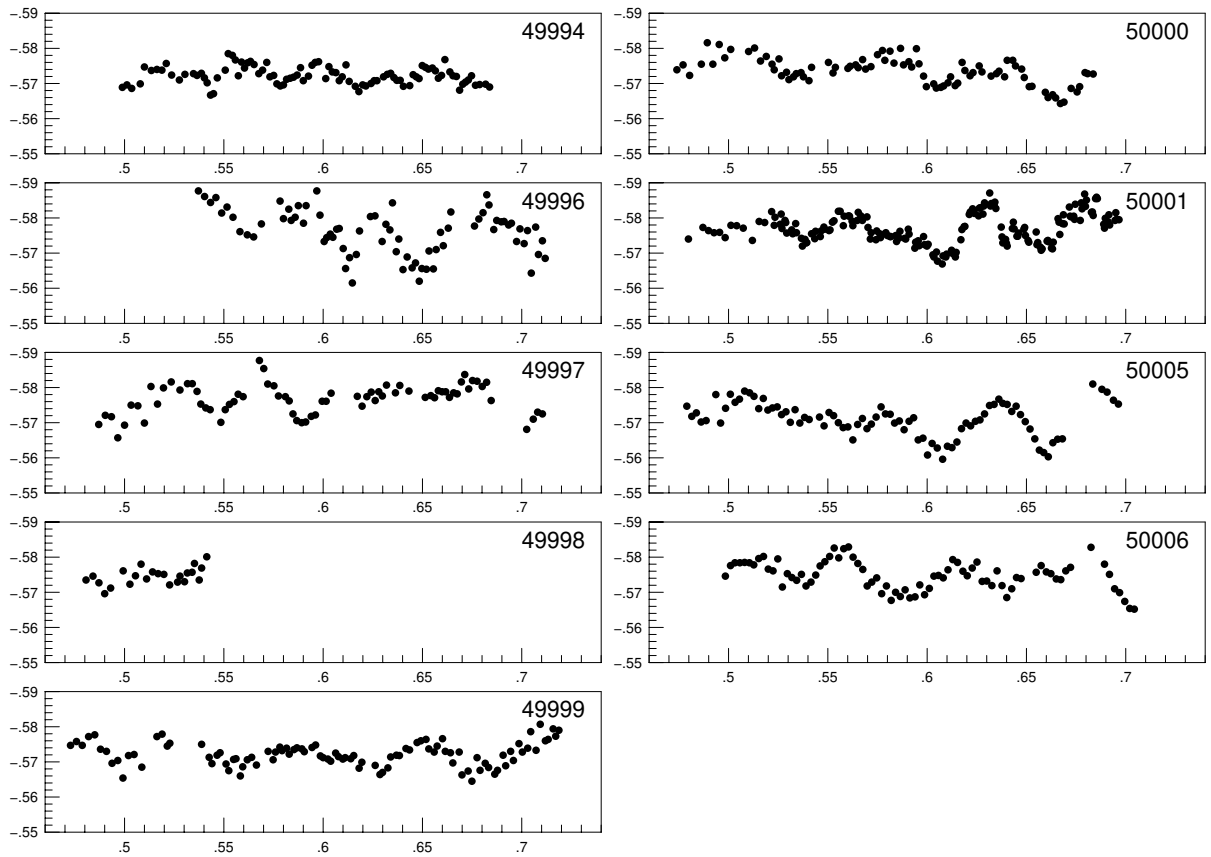


Figure 15: Light curves obtained in Spain in Strömgren y colour.

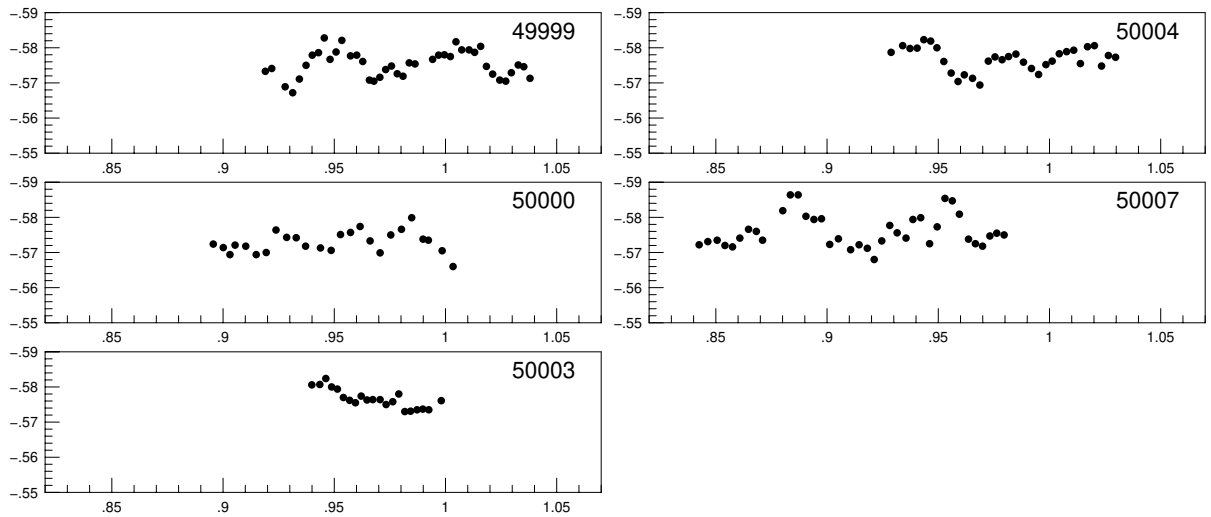


Figure 16: Light curves obtained in Mexico in Strömgren y colour.

Table 22. Strömgren y observations of 57 Tau by E. Rodriguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

57 Tau - HR	0.5869	-0.5724	0.6687	-0.5681	0.6261	-0.5806	0.4934	-0.5717
1358	0.5886	-0.5745	0.6703	-0.5698	0.6297	-0.5733	0.4966	-0.5657
2449994 +	0.5900	-0.5708	0.6717	-0.5704	0.6316	-0.5782	0.5000	-0.5693
0.4989 -0.5689	0.5926	-0.5721	0.6731	-0.5710	0.6336	-0.5766	0.5033	-0.5750
0.5012 -0.5696	0.5944	-0.5752	0.6747	-0.5722	0.6349	-0.5843	0.5067	-0.5748
0.5036 -0.5686	0.5960	-0.5760	0.6767	-0.5695	0.6368	-0.5704	0.5100	-0.5699
0.5079 -0.5699	0.5977	-0.5762	0.6788	-0.5697	0.6381	-0.5740	0.5133	-0.5803
0.5100 -0.5747	0.6013	-0.5714	0.6818	-0.5698	0.6402	-0.5653	0.5166	-0.5753
0.5135 -0.5737	0.6029	-0.5748	0.6838	-0.5690	0.6423	-0.5689	0.5196	-0.5799
0.5163 -0.5740	0.6046	-0.5733	2449996 +		0.6448	-0.5658	0.5235	-0.5816
0.5188 -0.5738	0.6064	-0.5731	0.5372	-0.5877	0.6465	-0.5672	0.5279	-0.5793
0.5210 -0.5757	0.6081	-0.5708	0.5403	-0.5861	0.6484	-0.5620	0.5317	-0.5811
0.5237 -0.5724	0.6096	-0.5719	0.5433	-0.5844	0.6497	-0.5656	0.5341	-0.5811
0.5276 -0.5710	0.6115	-0.5753	0.5460	-0.5858	0.6520	-0.5654	0.5365	-0.5789
0.5304 -0.5726	0.6131	-0.5706	0.5489	-0.5814	0.6533	-0.5706	0.5384	-0.5753
0.5347 -0.5728	0.6162	-0.5692	0.5516	-0.5831	0.6555	-0.5655	0.5409	-0.5742
0.5365 -0.5723	0.6180	-0.5677	0.5546	-0.5802	0.6569	-0.5710	0.5431	-0.5737
0.5387 -0.5729	0.6199	-0.5696	0.5581	-0.5761	0.6591	-0.5759	0.5485	-0.5701
0.5402 -0.5716	0.6215	-0.5693	0.5618	-0.5752	0.6605	-0.5721	0.5507	-0.5737
0.5416 -0.5702	0.6241	-0.5700	0.5650	-0.5746	0.6630	-0.5771	0.5528	-0.5752
0.5433 -0.5667	0.6257	-0.5708	0.5689	-0.5783	0.6643	-0.5817	0.5551	-0.5760
0.5448 -0.5671	0.6271	-0.5708	0.5783	-0.5848	0.6762	-0.5777	0.5572	-0.5781
0.5467 -0.5716	0.6304	-0.5719	0.5800	-0.5798	0.6784	-0.5797	0.5597	-0.5774
0.5507 -0.5738	0.6323	-0.5726	0.5827	-0.5825	0.6805	-0.5815	0.5679	-0.5877
0.5522 -0.5785	0.6340	-0.5729	0.5839	-0.5793	0.6824	-0.5866	0.5701	-0.5854
0.5543 -0.5780	0.6356	-0.5717	0.5859	-0.5802	0.6835	-0.5837	0.5721	-0.5810
0.5558 -0.5767	0.6371	-0.5709	0.5875	-0.5835	0.6859	-0.5767	0.5752	-0.5805
0.5573 -0.5722	0.6388	-0.5709	0.5901	-0.5785	0.6874	-0.5793	0.5775	-0.5776
0.5589 -0.5761	0.6404	-0.5692	0.5914	-0.5835	0.6897	-0.5789	0.5810	-0.5774
0.5604 -0.5744	0.6436	-0.5694	0.5968	-0.5877	0.6911	-0.5790	0.5829	-0.5762
0.5620 -0.5759	0.6453	-0.5725	0.5984	-0.5808	0.6934	-0.5780	0.5848	-0.5725
0.5634 -0.5763	0.6469	-0.5719	0.6005	-0.5733	0.6948	-0.5785	0.5867	-0.5706
0.5652 -0.5754	0.6483	-0.5714	0.6018	-0.5744	0.6974	-0.5733	0.5892	-0.5700
0.5676 -0.5728	0.6499	-0.5751	0.6036	-0.5754	0.6991	-0.5769	0.5912	-0.5702
0.5695 -0.5738	0.6515	-0.5746	0.6049	-0.5745	0.7012	-0.5727	0.5940	-0.5718
0.5716 -0.5760	0.6530	-0.5741	0.6068	-0.5768	0.7029	-0.5764	0.5961	-0.5722
0.5732 -0.5719	0.6550	-0.5744	0.6081	-0.5770	0.7048	-0.5643	0.5995	-0.5761
0.5751 -0.5723	0.6565	-0.5736	0.6101	-0.5713	0.7070	-0.5774	0.6015	-0.5761
0.5767 -0.5699	0.6580	-0.5715	0.6113	-0.5656	0.7084	-0.5696	0.6040	-0.5784
0.5784 -0.5693	0.6596	-0.5723	0.6133	-0.5687	0.7104	-0.5735	0.6172	-0.5775
0.5800 -0.5696	0.6613	-0.5768	0.6147	-0.5615	0.7118	-0.5685	0.6196	-0.5747
0.5816 -0.5712	0.6638	-0.5733	0.6167	-0.5696	2449997 +		0.6220	-0.5774
0.5834 -0.5715	0.6654	-0.5722	0.6183	-0.5763	0.4870	-0.5695	0.6242	-0.5787
0.5851 -0.5718	0.6671	-0.5720	0.6238	-0.5804	0.4903	-0.5721	0.6262	-0.5763

0.6280 -0.5788	0.5352 -0.5782	0.5944 -0.5741	0.6986 -0.5752	0.0244 -0.5708
0.6298 -0.5776	0.5376 -0.5735	0.5962 -0.5748	0.7003 -0.5728	0.0271 -0.5705
0.6319 -0.5807	0.5388 -0.5769	0.5986 -0.5717	0.7030 -0.5739	0.0296 -0.5729
0.6364 -0.5785	0.5414 -0.5801	0.6000 -0.5712	0.7045 -0.5786	0.0327 -0.5751
0.6386 -0.5806	2449999 +	0.6024 -0.5708	0.7072 -0.5733	0.0352 -0.5746
0.6432 -0.5790	0.4728 -0.5747	0.6038 -0.5702	0.7093 -0.5807	0.0380 -0.5713
0.6514 -0.5772	0.4758 -0.5758	0.6063 -0.5725	0.7119 -0.5760	0.4740 -0.5739
0.6542 -0.5777	0.4787 -0.5747	0.6077 -0.5715	0.7133 -0.5764	0.4771 -0.5753
0.6561 -0.5771	0.4819 -0.5772	0.6099 -0.5708	0.7158 -0.5794	0.4804 -0.5723
0.6580 -0.5791	0.4850 -0.5777	0.6111 -0.5712	0.7171 -0.5773	0.4863 -0.5755
0.6599 -0.5788	0.4879 -0.5736	0.6139 -0.5709	0.7187 -0.5790	0.4893 -0.5816
0.6617 -0.5788	0.4909 -0.5730	0.6154 -0.5718	0.9190 -0.5733	0.4921 -0.5755
0.6636 -0.5772	0.4937 -0.5696	0.6181 -0.5682	0.9219 -0.5741	0.4953 -0.5811
0.6657 -0.5785	0.4966 -0.5704	0.6195 -0.5699	0.9279 -0.5689	0.4981 -0.5773
0.6675 -0.5782	0.4992 -0.5654	0.6262 -0.5690	0.9313 -0.5672	0.5011 -0.5797
0.6696 -0.5816	0.5020 -0.5718	0.6286 -0.5664	0.9343 -0.5711	0.5101 -0.5791
0.6713 -0.5837	0.5048 -0.5721	0.6299 -0.5670	0.9373 -0.5750	0.5131 -0.5801
0.6733 -0.5796	0.5087 -0.5685	0.6326 -0.5683	0.9401 -0.5779	0.5161 -0.5764
0.6752 -0.5820	0.5163 -0.5772	0.6340 -0.5714	0.9429 -0.5786	0.5190 -0.5777
0.6775 -0.5818	0.5189 -0.5779	0.6369 -0.5719	0.9455 -0.5828	0.5219 -0.5755
0.6801 -0.5803	0.5215 -0.5745	0.6384 -0.5718	0.9481 -0.5767	0.5230 -0.5739
0.6823 -0.5815	0.5228 -0.5753	0.6417 -0.5738	0.9508 -0.5788	0.5254 -0.5770
0.6846 -0.5763	0.5388 -0.5750	0.6435 -0.5734	0.9534 -0.5821	0.5267 -0.5722
0.7025 -0.5681	0.5426 -0.5713	0.6473 -0.5755	0.9573 -0.5777	0.5292 -0.5732
0.7058 -0.5710	0.5440 -0.5695	0.6492 -0.5760	0.9601 -0.5779	0.5304 -0.5711
0.7080 -0.5730	0.5466 -0.5719	0.6518 -0.5764	0.9628 -0.5761	0.5327 -0.5719
0.7104 -0.5725	0.5481 -0.5726	0.6532 -0.5737	0.9658 -0.5708	0.5341 -0.5728
2449998 +	0.5511 -0.5694	0.6559 -0.5728	0.9678 -0.5705	0.5365 -0.5731
0.4806 -0.5735	0.5525 -0.5675	0.6574 -0.5745	0.9705 -0.5716	0.5377 -0.5719
0.4841 -0.5746	0.5549 -0.5707	0.6601 -0.5766	0.9731 -0.5738	0.5405 -0.5708
0.4871 -0.5727	0.5561 -0.5709	0.6615 -0.5730	0.9757 -0.5748	0.5418 -0.5746
0.4900 -0.5696	0.5583 -0.5660	0.6641 -0.5726	0.9783 -0.5726	0.5503 -0.5760
0.4930 -0.5712	0.5595 -0.5686	0.6653 -0.5697	0.9809 -0.5719	0.5526 -0.5730
0.4993 -0.5761	0.5618 -0.5706	0.6685 -0.5728	0.9837 -0.5757	0.5538 -0.5746
0.5027 -0.5723	0.5640 -0.5713	0.6699 -0.5663	0.9863 -0.5754	0.5601 -0.5743
0.5055 -0.5747	0.5664 -0.5691	0.6730 -0.5674	0.9942 -0.5767	0.5612 -0.5749
0.5083 -0.5780	0.5723 -0.5730	0.6749 -0.5645	0.9969 -0.5779	0.5640 -0.5753
0.5111 -0.5738	0.5748 -0.5706	0.6775 -0.5712	0.9995 -0.5780	0.5653 -0.5745
0.5141 -0.5758	0.5760 -0.5728	0.6790 -0.5676	2450000 +	0.5675 -0.5768
0.5169 -0.5753	0.5782 -0.5742	0.6816 -0.5696	0.0022 -0.5775	0.5690 -0.5741
0.5198 -0.5751	0.5793 -0.5732	0.6833 -0.5684	0.0047 -0.5817	0.5717 -0.5748
0.5227 -0.5721	0.5816 -0.5739	0.6864 -0.5665	0.0073 -0.5794	0.5750 -0.5782
0.5267 -0.5729	0.5829 -0.5722	0.6878 -0.5676	0.0106 -0.5794	0.5775 -0.5794
0.5279 -0.5746	0.5853 -0.5735	0.6906 -0.5719	0.0131 -0.5787	0.5787 -0.5766
0.5302 -0.5730	0.5868 -0.5740	0.6919 -0.5689	0.0158 -0.5804	0.5813 -0.5792
0.5316 -0.5755	0.5893 -0.5737	0.6944 -0.5730	0.0184 -0.5747	0.5833 -0.5758
0.5340 -0.5757	0.5905 -0.5729	0.6958 -0.5704	0.0212 -0.5725	0.5866 -0.5800

0.5881	-0.5753	0.9054	-0.5721	0.5342	-0.5758	0.5892	-0.5740	0.6395	-0.5739
0.5908	-0.5762	0.9102	-0.5718	0.5367	-0.5742	0.5905	-0.5768	0.6399	-0.5728
0.5922	-0.5747	0.9149	-0.5694	0.5372	-0.5720	0.5909	-0.5754	0.6403	-0.5720
0.5946	-0.5799	0.9194	-0.5700	0.5385	-0.5739	0.5938	-0.5714	0.6429	-0.5770
0.5959	-0.5756	0.9238	-0.5764	0.5390	-0.5729	0.5942	-0.5731	0.6434	-0.5788
0.5982	-0.5721	0.9286	-0.5743	0.5394	-0.5730	0.5955	-0.5735	0.6438	-0.5769
0.5996	-0.5691	0.9329	-0.5742	0.5418	-0.5755	0.5960	-0.5721	0.6452	-0.5748
0.6033	-0.5699	0.9371	-0.5718	0.5434	-0.5741	0.5982	-0.5747	0.6456	-0.5748
0.6046	-0.5687	0.9438	-0.5713	0.5438	-0.5762	0.5987	-0.5724	0.6461	-0.5757
0.6069	-0.5689	0.9486	-0.5706	0.5462	-0.5747	0.5999	-0.5720	0.6487	-0.5768
0.6083	-0.5693	0.9528	-0.5751	0.5466	-0.5763	0.6005	-0.5725	0.6491	-0.5773
0.6105	-0.5702	0.9573	-0.5757	0.5480	-0.5774	0.6029	-0.5695	0.6495	-0.5750
0.6118	-0.5719	0.9616	-0.5774	0.5484	-0.5768	0.6034	-0.5689	0.6508	-0.5736
0.6141	-0.5694	0.9661	-0.5733	0.5506	-0.5764	0.6047	-0.5703	0.6512	-0.5731
0.6154	-0.5701	0.9706	-0.5699	0.5511	-0.5766	0.6052	-0.5677	0.6549	-0.5760
0.6176	-0.5760	0.9754	-0.5750	0.5523	-0.5788	0.6076	-0.5669	0.6553	-0.5724
0.6190	-0.5737	0.9802	-0.5766	0.5531	-0.5792	0.6080	-0.5692	0.6557	-0.5730
0.6216	-0.5722	0.9848	-0.5799	0.5553	-0.5819	0.6094	-0.5689	0.6570	-0.5717
0.6231	-0.5731	0.9899	-0.5738	0.5562	-0.5819	0.6098	-0.5697	0.6574	-0.5708
0.6262	-0.5750	0.9923	-0.5735	0.5578	-0.5778	0.6123	-0.5708	0.6579	-0.5712
0.6276	-0.5733	0.9985	-0.5705	0.5582	-0.5805	0.6128	-0.5699	0.6604	-0.5734
0.6322	-0.5721	2450001 +		0.5604	-0.5806	0.6142	-0.5689	0.6608	-0.5736
0.6349	-0.5728	0.0034	-0.5660	0.5609	-0.5805	0.6146	-0.5702	0.6613	-0.5732
0.6362	-0.5735	0.4798	-0.5740	0.5622	-0.5791	0.6170	-0.5738	0.6626	-0.5714
0.6390	-0.5719	0.4871	-0.5773	0.5626	-0.5778	0.6175	-0.5767	0.6631	-0.5712
0.6403	-0.5766	0.4899	-0.5764	0.5648	-0.5793	0.6186	-0.5775	0.6635	-0.5731
0.6431	-0.5766	0.4927	-0.5758	0.5653	-0.5816	0.6190	-0.5776	0.6659	-0.5798
0.6445	-0.5750	0.4955	-0.5759	0.5666	-0.5806	0.6212	-0.5810	0.6664	-0.5788
0.6476	-0.5741	0.4983	-0.5744	0.5674	-0.5793	0.6217	-0.5817	0.6668	-0.5753
0.6489	-0.5717	0.5012	-0.5779	0.5697	-0.5803	0.6229	-0.5826	0.6681	-0.5784
0.6514	-0.5691	0.5041	-0.5778	0.5702	-0.5773	0.6234	-0.5817	0.6686	-0.5809
0.6528	-0.5692	0.5074	-0.5771	0.5714	-0.5740	0.6238	-0.5813	0.6690	-0.5783
0.6595	-0.5675	0.5120	-0.5736	0.5718	-0.5758	0.6259	-0.5806	0.6716	-0.5831
0.6609	-0.5660	0.5154	-0.5790	0.5742	-0.5738	0.6263	-0.5828	0.6720	-0.5805
0.6632	-0.5668	0.5182	-0.5787	0.5746	-0.5763	0.6268	-0.5829	0.6725	-0.5803
0.6647	-0.5659	0.5217	-0.5818	0.5761	-0.5755	0.6281	-0.5811	0.6738	-0.5805
0.6671	-0.5643	0.5230	-0.5779	0.5765	-0.5744	0.6285	-0.5834	0.6742	-0.5796
0.6689	-0.5647	0.5234	-0.5802	0.5788	-0.5755	0.6289	-0.5843	0.6746	-0.5839
0.6725	-0.5686	0.5260	-0.5782	0.5792	-0.5758	0.6315	-0.5871	0.6771	-0.5793
0.6755	-0.5676	0.5265	-0.5811	0.5800	-0.5750	0.6319	-0.5834	0.6776	-0.5843
0.6768	-0.5691	0.5269	-0.5770	0.5813	-0.5747	0.6323	-0.5841	0.6780	-0.5826
0.6795	-0.5731	0.5284	-0.5793	0.5817	-0.5747	0.6337	-0.5837	0.6793	-0.5868
0.6808	-0.5728	0.5288	-0.5787	0.5842	-0.5750	0.6341	-0.5845	0.6797	-0.5833
0.6836	-0.5727	0.5293	-0.5757	0.5846	-0.5733	0.6346	-0.5827	0.6802	-0.5851
0.8956	-0.5724	0.5318	-0.5766	0.5859	-0.5743	0.6373	-0.5774	0.6827	-0.5816
0.9001	-0.5714	0.5323	-0.5755	0.5863	-0.5762	0.6377	-0.5746	0.6832	-0.5817
0.9031	-0.5694	0.5338	-0.5784	0.5887	-0.5742	0.6381	-0.5729	0.6836	-0.5807

0.6848	-0.5855	0.9654	-0.5713	0.5406	-0.5709	0.6542	-0.5654	0.5795	-0.5718
0.6853	-0.5859	0.9687	-0.5694	0.5458	-0.5716	0.6565	-0.5622	0.5819	-0.5677
0.6857	-0.5855	0.9725	-0.5762	0.5481	-0.5691	0.6587	-0.5615	0.5841	-0.5700
0.6889	-0.5782	0.9755	-0.5774	0.5506	-0.5729	0.6610	-0.5603	0.5865	-0.5688
0.6893	-0.5771	0.9787	-0.5766	0.5529	-0.5720	0.6633	-0.5643	0.5889	-0.5707
0.6897	-0.5799	0.9816	-0.5775	0.5553	-0.5700	0.6657	-0.5653	0.5913	-0.5684
0.6911	-0.5789	0.9849	-0.5782	0.5577	-0.5686	0.6681	-0.5654	0.5939	-0.5687
0.6915	-0.5809	0.9883	-0.5759	0.5601	-0.5688	0.6834	-0.5810	0.5963	-0.5721
0.6919	-0.5780	0.9919	-0.5741	0.5626	-0.5651	0.6880	-0.5795	0.5987	-0.5693
0.6946	-0.5793	0.9951	-0.5724	0.5650	-0.5695	0.6906	-0.5787	0.6011	-0.5711
0.6950	-0.5815	0.9984	-0.5752	0.5674	-0.5712	0.6938	-0.5764	0.6034	-0.5746
0.6954	-0.5796	2450005 +		0.5697	-0.5683	0.6963	-0.5753	0.6057	-0.5748
0.6966	-0.5795	0.0012	-0.5762	0.5719	-0.5696	2450006 +		0.6081	-0.5741
2450003 +		0.0044	-0.5783	0.5743	-0.5716	0.4984	-0.5746	0.6105	-0.5764
0.9399	-0.5806	0.0077	-0.5789	0.5768	-0.5745	0.5010	-0.5776	0.6129	-0.5793
0.9435	-0.5807	0.0109	-0.5793	0.5790	-0.5725	0.5032	-0.5784	0.6153	-0.5785
0.9462	-0.5824	0.0139	-0.5755	0.5814	-0.5724	0.5057	-0.5784	0.6180	-0.5760
0.9488	-0.5800	0.0171	-0.5803	0.5836	-0.5699	0.5081	-0.5785	0.6202	-0.5747
0.9514	-0.5794	0.0202	-0.5806	0.5860	-0.5705	0.5105	-0.5784	0.6227	-0.5769
0.9541	-0.5770	0.0234	-0.5748	0.5884	-0.5680	0.5127	-0.5778	0.6251	-0.5786
0.9569	-0.5762	0.0265	-0.5778	0.5909	-0.5704	0.5152	-0.5796	0.6277	-0.5731
0.9595	-0.5755	0.0297	-0.5773	0.5932	-0.5714	0.5176	-0.5802	0.6300	-0.5732
0.9621	-0.5774	0.4790	-0.5747	0.5955	-0.5651	0.5200	-0.5766	0.6326	-0.5719
0.9647	-0.5763	0.4815	-0.5718	0.5979	-0.5656	0.5224	-0.5761	0.6352	-0.5761
0.9673	-0.5764	0.4838	-0.5728	0.6002	-0.5608	0.5248	-0.5795	0.6377	-0.5719
0.9706	-0.5764	0.4862	-0.5702	0.6025	-0.5641	0.5271	-0.5715	0.6401	-0.5685
0.9733	-0.5750	0.4887	-0.5706	0.6051	-0.5628	0.5296	-0.5753	0.6426	-0.5710
0.9763	-0.5758	0.4936	-0.5780	0.6078	-0.5596	0.5319	-0.5742	0.6450	-0.5742
0.9790	-0.5780	0.4960	-0.5699	0.6102	-0.5633	0.5343	-0.5734	0.6473	-0.5739
0.9817	-0.5730	0.4985	-0.5741	0.6125	-0.5629	0.5367	-0.5751	0.6549	-0.5757
0.9843	-0.5731	0.5009	-0.5781	0.6150	-0.5645	0.5390	-0.5718	0.6574	-0.5776
0.9872	-0.5735	0.5033	-0.5758	0.6173	-0.5683	0.5415	-0.5729	0.6600	-0.5758
0.9898	-0.5737	0.5055	-0.5767	0.6196	-0.5699	0.5439	-0.5749	0.6623	-0.5753
0.9925	-0.5735	0.5081	-0.5790	0.6219	-0.5691	0.5461	-0.5775	0.6650	-0.5738
0.9981	-0.5761	0.5106	-0.5785	0.6243	-0.5704	0.5485	-0.5787	0.6673	-0.5736
2450004 +		0.5128	-0.5775	0.6266	-0.5708	0.5509	-0.5802	0.6698	-0.5761
0.9288	-0.5787	0.5152	-0.5740	0.6289	-0.5725	0.5532	-0.5826	0.6722	-0.5771
0.9340	-0.5806	0.5175	-0.5769	0.6314	-0.5749	0.5555	-0.5798	0.6825	-0.5828
0.9373	-0.5798	0.5198	-0.5736	0.6337	-0.5752	0.5580	-0.5824	0.6893	-0.5780
0.9405	-0.5799	0.5221	-0.5742	0.6361	-0.5767	0.5604	-0.5829	0.6918	-0.5751
0.9435	-0.5823	0.5245	-0.5745	0.6381	-0.5755	0.5627	-0.5800	0.6944	-0.5710
0.9466	-0.5819	0.5267	-0.5723	0.6403	-0.5752	0.5651	-0.5782	0.6969	-0.5699
0.9494	-0.5800	0.5289	-0.5731	0.6426	-0.5732	0.5676	-0.5765	0.6995	-0.5674
0.9525	-0.5761	0.5311	-0.5701	0.6448	-0.5747	0.5698	-0.5718	0.7020	-0.5654
0.9558	-0.5728	0.5335	-0.5737	0.6470	-0.5723	0.5721	-0.5729	0.7043	-0.5652
0.9589	-0.5704	0.5359	-0.5699	0.6494	-0.5703	0.5746	-0.5741	2450007 +	
0.9617	-0.5723	0.5383	-0.5715	0.6518	-0.5682	0.5771	-0.5696	0.8425	-0.5722

0.8464 -0.5731	0.8801 -0.5819	0.9106 -0.5708	0.9386 -0.5794	0.9667 -0.5725
0.8506 -0.5735	0.8835 -0.5864	0.9144 -0.5722	0.9421 -0.5799	0.9699 -0.5718
0.8541 -0.5720	0.8870 -0.5864	0.9181 -0.5712	0.9461 -0.5725	0.9732 -0.5747
0.8575 -0.5716	0.8905 -0.5803	0.9212 -0.5680	0.9495 -0.5773	0.9763 -0.5755
0.8608 -0.5741	0.8941 -0.5794	0.9246 -0.5733	0.9530 -0.5854	0.9796 -0.5750
0.8647 -0.5766	0.8975 -0.5796	0.9282 -0.5777	0.9563 -0.5847	
0.8682 -0.5760	0.9012 -0.5723	0.9315 -0.5756	0.9595 -0.5809	
0.8710 -0.5735	0.9051 -0.5739	0.9355 -0.5741	0.9636 -0.5738	

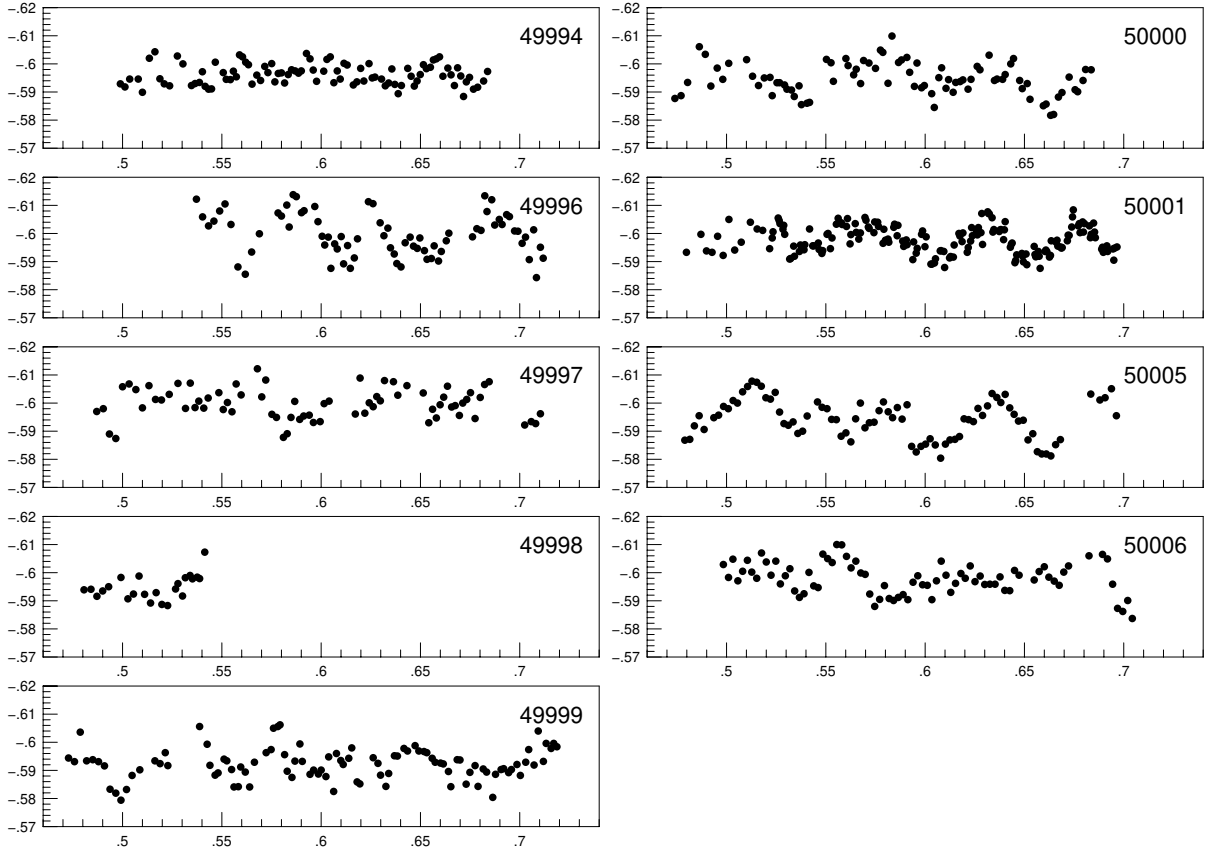


Figure 17: Light curves obtained in Spain in Strömgren u colour.

Table 23. Strömgren u observations of 57 Tau by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

57 Tau - HR	0.5100 -0.5899	0.5347 -0.5923	0.5507 -0.5969	0.5634 -0.5997
1358	0.5135 -0.6020	0.5365 -0.5930	0.5522 -0.5945	0.5652 -0.5928
u colour	0.5163 -0.6043	0.5387 -0.5934	0.5543 -0.5944	0.5676 -0.5960
2449994 +	0.5188 -0.5947	0.5402 -0.5972	0.5558 -0.5974	0.5695 -0.5941
0.4989 -0.5929	0.5210 -0.5929	0.5416 -0.5920	0.5573 -0.5954	0.5716 -0.5991
0.5012 -0.5918	0.5237 -0.5922	0.5433 -0.5910	0.5589 -0.6032	0.5732 -0.5969
0.5036 -0.5946	0.5276 -0.6028	0.5448 -0.5911	0.5604 -0.6025	0.5751 -0.6001
0.5079 -0.5946	0.5304 -0.6000	0.5467 -0.6006	0.5620 -0.6006	0.5767 -0.5936

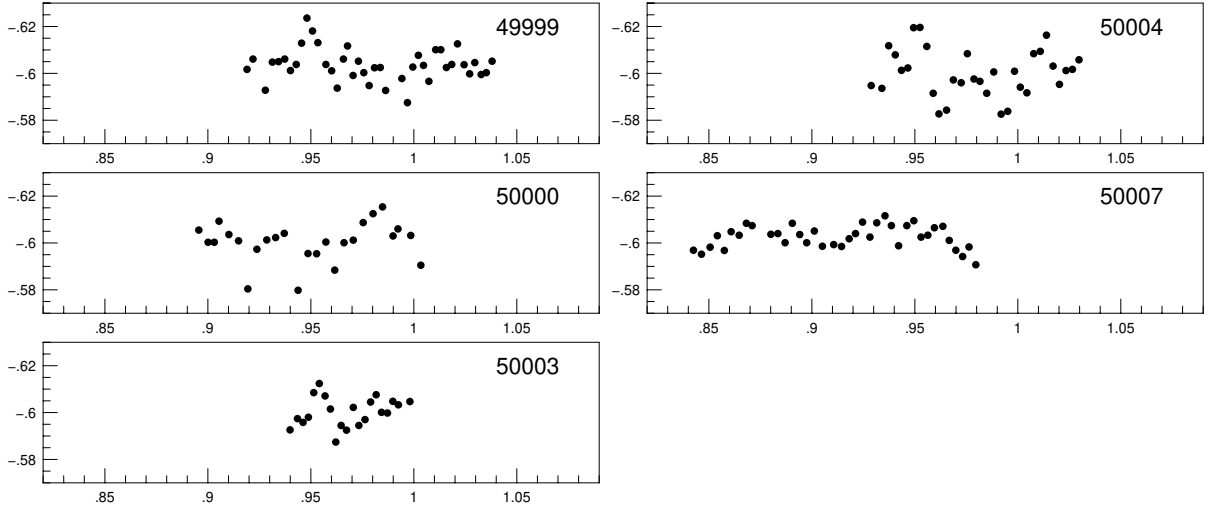


Figure 18: Light curves obtained in Mexico in Strömgren u colour.

0.5784	-0.5966	0.6323	-0.5922	0.6818	-0.5939	0.6068	-0.5963	0.6630	-0.5974
0.5800	-0.5968	0.6340	-0.5932	0.6838	-0.5973	0.6081	-0.5945	0.6643	-0.6001
0.5816	-0.5932	0.6356	-0.5982	2449996	+	0.6101	-0.5989	0.6762	-0.5988
0.5834	-0.5962	0.6371	-0.5927	0.5372	-0.6122	0.6113	-0.5892	0.6784	-0.6017
0.5851	-0.5979	0.6388	-0.5894	0.5403	-0.6059	0.6133	-0.5957	0.6805	-0.6011
0.5869	-0.5975	0.6404	-0.5923	0.5433	-0.6027	0.6147	-0.5876	0.6824	-0.6134
0.5886	-0.5967	0.6436	-0.5984	0.5460	-0.6044	0.6167	-0.5913	0.6835	-0.6078
0.5900	-0.5975	0.6453	-0.5956	0.5489	-0.6080	0.6183	-0.5981	0.6859	-0.6120
0.5926	-0.6037	0.6469	-0.5921	0.5516	-0.6105	0.6238	-0.6113	0.6874	-0.6030
0.5944	-0.6018	0.6483	-0.5939	0.5546	-0.6032	0.6261	-0.6106	0.6897	-0.6050
0.5960	-0.5978	0.6499	-0.5962	0.5581	-0.5881	0.6297	-0.6038	0.6911	-0.6032
0.5977	-0.5938	0.6515	-0.5997	0.5618	-0.5855	0.6316	-0.5992	0.6934	-0.6067
0.6013	-0.5974	0.6530	-0.5983	0.5650	-0.5934	0.6336	-0.6019	0.6948	-0.6060
0.6029	-0.6016	0.6550	-0.5988	0.5689	-0.5999	0.6349	-0.5949	0.6974	-0.6009
0.6046	-0.6025	0.6565	-0.6014	0.5783	-0.6073	0.6368	-0.5927	0.6991	-0.6008
0.6064	-0.5933	0.6580	-0.6018	0.5800	-0.6062	0.6381	-0.5893	0.7012	-0.5965
0.6081	-0.5975	0.6596	-0.6025	0.5827	-0.6101	0.6402	-0.5881	0.7029	-0.5987
0.6096	-0.5946	0.6613	-0.5956	0.5839	-0.6023	0.6423	-0.5967	0.7048	-0.5907
0.6115	-0.6002	0.6638	-0.5985	0.5859	-0.6138	0.6448	-0.5987	0.7070	-0.6013
0.6131	-0.5996	0.6654	-0.5961	0.5875	-0.6131	0.6465	-0.5955	0.7084	-0.5843
0.6162	-0.5925	0.6671	-0.5923	0.5901	-0.6074	0.6484	-0.5947	0.7104	-0.5951
0.6180	-0.5936	0.6687	-0.5986	0.5914	-0.6081	0.6497	-0.5984	0.7118	-0.5912
0.6199	-0.5984	0.6703	-0.5957	0.5968	-0.6096	0.6520	-0.5939	2449997	+
0.6215	-0.5939	0.6717	-0.5884	0.5984	-0.6042	0.6533	-0.5908	0.4870	-0.5970
0.6241	-0.6001	0.6731	-0.5936	0.6005	-0.5990	0.6555	-0.5911	0.4903	-0.5980
0.6257	-0.5950	0.6747	-0.5952	0.6018	-0.5959	0.6569	-0.5956	0.4934	-0.5890
0.6271	-0.5953	0.6767	-0.5910	0.6036	-0.5987	0.6591	-0.5902	0.4966	-0.5874
0.6304	-0.5946	0.6788	-0.5917	0.6049	-0.5876	0.6605	-0.5936	0.5000	-0.6058

0.5033	-0.6068	0.6514	-0.6036	0.4758	-0.5931	0.6063	-0.5825	0.7119	-0.5932
0.5067	-0.6048	0.6542	-0.5930	0.4787	-0.6036	0.6077	-0.5960	0.7133	-0.5996
0.5100	-0.5983	0.6561	-0.5978	0.4819	-0.5934	0.6099	-0.5935	0.7158	-0.5978
0.5133	-0.6062	0.6580	-0.5947	0.4850	-0.5938	0.6111	-0.5921	0.7171	-0.5996
0.5166	-0.6013	0.6599	-0.5994	0.4879	-0.5931	0.6139	-0.5943	0.7187	-0.5984
0.5196	-0.6011	0.6617	-0.6021	0.4909	-0.5916	0.6154	-0.5980	0.9190	-0.6017
0.5235	-0.6031	0.6636	-0.6060	0.4937	-0.5833	0.6181	-0.5859	0.9219	-0.6061
0.5279	-0.6070	0.6657	-0.5986	0.4966	-0.5819	0.6195	-0.5852	0.9279	-0.5928
0.5317	-0.5981	0.6675	-0.5991	0.4992	-0.5794	0.6262	-0.5945	0.9313	-0.6048
0.5341	-0.6071	0.6696	-0.5956	0.5020	-0.5832	0.6286	-0.5925	0.9343	-0.6050
0.5365	-0.5984	0.6713	-0.6000	0.5048	-0.5882	0.6299	-0.5883	0.9373	-0.6061
0.5384	-0.6007	0.6733	-0.6013	0.5087	-0.5902	0.6326	-0.5843	0.9401	-0.6012
0.5409	-0.5982	0.6752	-0.6037	0.5163	-0.5934	0.6340	-0.5889	0.9429	-0.6038
0.5431	-0.6018	0.6775	-0.5945	0.5189	-0.5924	0.6369	-0.5952	0.9455	-0.6129
0.5485	-0.6037	0.6801	-0.6020	0.5215	-0.5963	0.6384	-0.5951	0.9481	-0.6236
0.5507	-0.5977	0.6823	-0.6066	0.5228	-0.5917	0.6417	-0.5978	0.9508	-0.6181
0.5528	-0.6002	0.6846	-0.6076	0.5388	-0.6056	0.6435	-0.5969	0.9534	-0.6131
0.5551	-0.5969	0.7025	-0.5922	0.5426	-0.5993	0.6473	-0.5988	0.9573	-0.6038
0.5572	-0.6068	0.7058	-0.5934	0.5440	-0.5918	0.6492	-0.5969	0.9601	-0.6011
0.5597	-0.6029	0.7080	-0.5927	0.5466	-0.5883	0.6518	-0.5967	0.9628	-0.5937
0.5679	-0.6122	0.7104	-0.5962	0.5481	-0.5891	0.6532	-0.5963	0.9658	-0.6061
0.5701	-0.6022	2449998 +		0.5511	-0.5940	0.6559	-0.5943	0.9678	-0.6117
0.5721	-0.6082	0.4806	-0.5939	0.5525	-0.5934	0.6574	-0.5929	0.9705	-0.5991
0.5752	-0.5960	0.4841	-0.5941	0.5549	-0.5903	0.6601	-0.5926	0.9731	-0.6052
0.5775	-0.5949	0.4871	-0.5916	0.5561	-0.5841	0.6615	-0.5923	0.9757	-0.6003
0.5810	-0.5878	0.4900	-0.5935	0.5583	-0.5842	0.6641	-0.5896	0.9783	-0.5948
0.5829	-0.5891	0.4930	-0.5950	0.5595	-0.5912	0.6653	-0.5842	0.9809	-0.6024
0.5848	-0.5949	0.4992	-0.5983	0.5618	-0.5894	0.6685	-0.5938	0.9837	-0.6025
0.5867	-0.6006	0.5027	-0.5907	0.5640	-0.5841	0.6699	-0.5937	0.9863	-0.5927
0.5892	-0.5942	0.5055	-0.5924	0.5664	-0.5929	0.6730	-0.5851	0.9942	-0.5978
0.5912	-0.5954	0.5083	-0.5988	0.5723	-0.5963	0.6749	-0.5893	0.9969	-0.5875
0.5940	-0.5957	0.5111	-0.5923	0.5748	-0.5974	0.6775	-0.5917	0.9995	-0.6027
0.5961	-0.5931	0.5141	-0.5892	0.5760	-0.6050	0.6790	-0.5843	2450000 +	
0.5995	-0.5934	0.5169	-0.5929	0.5782	-0.6056	0.6816	-0.5905	0.0022	-0.6077
0.6015	-0.5998	0.5198	-0.5887	0.5793	-0.6062	0.6833	-0.5894	0.0047	-0.6034
0.6040	-0.6007	0.5227	-0.5883	0.5816	-0.5956	0.6864	-0.5804	0.0073	-0.5966
0.6172	-0.5961	0.5267	-0.5942	0.5829	-0.5897	0.6878	-0.5886	0.0106	-0.6101
0.6196	-0.6089	0.5279	-0.5961	0.5853	-0.5875	0.6906	-0.5903	0.0131	-0.6101
0.6220	-0.5964	0.5302	-0.5917	0.5868	-0.5933	0.6919	-0.5906	0.0158	-0.6025
0.6242	-0.6001	0.5316	-0.5982	0.5893	-0.5994	0.6944	-0.5892	0.0184	-0.6038
0.6262	-0.5987	0.5340	-0.5990	0.5905	-0.5932	0.6958	-0.5903	0.0212	-0.6126
0.6280	-0.6023	0.5352	-0.5978	0.5944	-0.5886	0.6986	-0.5921	0.0244	-0.6037
0.6298	-0.6008	0.5376	-0.5984	0.5962	-0.5901	0.7003	-0.5882	0.0271	-0.5998
0.6319	-0.6080	0.5388	-0.5979	0.5986	-0.5887	0.7030	-0.5929	0.0296	-0.6046
0.6364	-0.6076	0.5414	-0.6073	0.6000	-0.5901	0.7045	-0.5974	0.0327	-0.5995
0.6386	-0.6028	2449999 +		0.6024	-0.5878	0.7072	-0.5919	0.0352	-0.6003
0.6432	-0.6062	0.4728	-0.5944	0.6038	-0.5948	0.7093	-0.6040	0.0380	-0.6052

0.4740	-0.5877	0.5996	-0.5923	0.9329	-0.6023	0.5418	-0.6016	0.5960	-0.5947
0.4771	-0.5887	0.6033	-0.5894	0.9371	-0.6041	0.5434	-0.5956	0.5982	-0.5997
0.4804	-0.5934	0.6046	-0.5845	0.9438	-0.5798	0.5438	-0.5956	0.5987	-0.6009
0.4863	-0.6061	0.6069	-0.5951	0.9486	-0.5955	0.5462	-0.5966	0.5999	-0.5953
0.4893	-0.6034	0.6083	-0.5986	0.9528	-0.5954	0.5466	-0.5943	0.6005	-0.5988
0.4921	-0.5921	0.6105	-0.5913	0.9573	-0.6004	0.5480	-0.5929	0.6029	-0.5891
0.4953	-0.5985	0.6118	-0.5944	0.9616	-0.5884	0.5484	-0.5939	0.6034	-0.5891
0.4981	-0.5945	0.6141	-0.5899	0.9661	-0.6001	0.5506	-0.5997	0.6047	-0.5895
0.5011	-0.6002	0.6154	-0.5934	0.9706	-0.6012	0.5511	-0.6000	0.6052	-0.5910
0.5101	-0.6015	0.6176	-0.5937	0.9754	-0.6087	0.5523	-0.5946	0.6076	-0.5938
0.5131	-0.5956	0.6190	-0.5943	0.9802	-0.6125	0.5531	-0.5984	0.6080	-0.5939
0.5161	-0.5923	0.6216	-0.5910	0.9848	-0.6154	0.5553	-0.6033	0.6094	-0.5936
0.5190	-0.5950	0.6231	-0.5945	0.9899	-0.6030	0.5562	-0.6054	0.6098	-0.5879
0.5219	-0.5952	0.6262	-0.5991	0.9923	-0.6060	0.5578	-0.6038	0.6123	-0.5913
0.5230	-0.5887	0.6276	-0.5979	0.9985	-0.6032	0.5582	-0.6032	0.6128	-0.5918
0.5254	-0.5933	0.6322	-0.6031	2450001 +		0.5604	-0.6025	0.6142	-0.5916
0.5267	-0.5933	0.6349	-0.5941	0.0034	-0.5905	0.5609	-0.6053	0.6146	-0.5959
0.5292	-0.5925	0.6362	-0.5946	0.4798	-0.5933	0.5622	-0.5963	0.6170	-0.6000
0.5304	-0.5910	0.6390	-0.5945	0.4871	-0.5997	0.5626	-0.5996	0.6175	-0.5991
0.5327	-0.5907	0.6403	-0.5962	0.4899	-0.5938	0.5648	-0.6035	0.6186	-0.5971
0.5341	-0.5884	0.6431	-0.6000	0.4927	-0.5933	0.5653	-0.6004	0.6190	-0.6002
0.5365	-0.5922	0.6445	-0.6019	0.4955	-0.5990	0.5666	-0.5980	0.6212	-0.5933
0.5377	-0.5855	0.6476	-0.5941	0.4983	-0.5922	0.5674	-0.6002	0.6217	-0.5950
0.5405	-0.5860	0.6489	-0.5912	0.5012	-0.6050	0.5697	-0.6057	0.6229	-0.5973
0.5418	-0.5863	0.6514	-0.5930	0.5041	-0.5941	0.5702	-0.6047	0.6234	-0.6021
0.5503	-0.6016	0.6528	-0.5874	0.5074	-0.5969	0.5714	-0.6023	0.6238	-0.5992
0.5526	-0.6004	0.6595	-0.5851	0.5120	-0.6040	0.5718	-0.6018	0.6259	-0.6007
0.5538	-0.5938	0.6609	-0.5857	0.5154	-0.6016	0.5742	-0.6003	0.6263	-0.5995
0.5601	-0.6019	0.6632	-0.5817	0.5182	-0.6011	0.5746	-0.6041	0.6268	-0.6021
0.5612	-0.5994	0.6647	-0.5820	0.5217	-0.5946	0.5761	-0.6040	0.6281	-0.6003
0.5640	-0.5961	0.6671	-0.5882	0.5230	-0.5984	0.5765	-0.6025	0.6285	-0.6071
0.5653	-0.5981	0.6689	-0.5898	0.5234	-0.6006	0.5788	-0.5965	0.6289	-0.5961
0.5675	-0.5930	0.6725	-0.5953	0.5260	-0.6055	0.5792	-0.6015	0.6315	-0.6077
0.5690	-0.6012	0.6755	-0.5908	0.5265	-0.6046	0.5800	-0.5976	0.6319	-0.6071
0.5717	-0.6003	0.6768	-0.5901	0.5269	-0.6035	0.5813	-0.5980	0.6323	-0.6070
0.5750	-0.5984	0.6795	-0.5941	0.5284	-0.6015	0.5817	-0.5969	0.6337	-0.6056
0.5775	-0.6049	0.6808	-0.5980	0.5288	-0.6029	0.5842	-0.6022	0.6341	-0.6005
0.5787	-0.6041	0.6836	-0.5979	0.5293	-0.5997	0.5846	-0.6033	0.6346	-0.6014
0.5813	-0.5931	0.8956	-0.6055	0.5318	-0.5909	0.5859	-0.5992	0.6373	-0.6007
0.5833	-0.6099	0.9001	-0.6003	0.5323	-0.5911	0.5863	-0.6029	0.6377	-0.6012
0.5866	-0.6005	0.9031	-0.6003	0.5338	-0.5955	0.5887	-0.5973	0.6381	-0.6014
0.5881	-0.6014	0.9054	-0.6093	0.5342	-0.5919	0.5892	-0.5954	0.6395	-0.5978
0.5908	-0.6023	0.9102	-0.6036	0.5367	-0.5936	0.5905	-0.5977	0.6399	-0.6013
0.5922	-0.5970	0.9149	-0.6009	0.5372	-0.5959	0.5909	-0.5960	0.6403	-0.6042
0.5946	-0.5920	0.9194	-0.5804	0.5385	-0.5953	0.5938	-0.5907	0.6429	-0.5951
0.5959	-0.6003	0.9238	-0.5973	0.5390	-0.5942	0.5942	-0.5970	0.6434	-0.5962
0.5982	-0.5915	0.9286	-0.6013	0.5394	-0.5960	0.5955	-0.5930	0.6438	-0.5966

0.6452	-0.5896	0.6911	-0.5950	0.9849	-0.5915	0.5577	-0.5882	0.6681	-0.5870
0.6456	-0.5904	0.6915	-0.5956	0.9883	-0.6006	0.5601	-0.5894	0.6834	-0.6032
0.6461	-0.5924	0.6919	-0.5936	0.9919	-0.5826	0.5626	-0.5862	0.6880	-0.6011
0.6487	-0.5929	0.6946	-0.5945	0.9951	-0.5838	0.5650	-0.5944	0.6906	-0.6019
0.6491	-0.5919	0.6950	-0.5905	0.9984	-0.6009	0.5674	-0.6000	0.6938	-0.6051
0.6495	-0.5899	0.6954	-0.5948	2450005 +		0.5697	-0.5912	0.6963	-0.5955
0.6508	-0.5927	0.6966	-0.5952	0.0012	-0.5941	0.5719	-0.5930	2450006 +	
0.6512	-0.5889	2450003 +		0.0044	-0.5917	0.5743	-0.5932	0.4984	-0.6029
0.6549	-0.5954	0.9399	-0.5926	0.0077	-0.6084	0.5768	-0.5973	0.5010	-0.5983
0.6553	-0.5925	0.9435	-0.5974	0.0109	-0.6094	0.5790	-0.6004	0.5032	-0.6048
0.6557	-0.5917	0.9462	-0.5958	0.0139	-0.6163	0.5814	-0.5969	0.5057	-0.5971
0.6570	-0.5936	0.9488	-0.5980	0.0171	-0.6031	0.5836	-0.5948	0.5081	-0.6005
0.6574	-0.5919	0.9514	-0.6085	0.0202	-0.5953	0.5860	-0.5984	0.5105	-0.6044
0.6579	-0.5876	0.9541	-0.6124	0.0234	-0.6012	0.5884	-0.5943	0.5127	-0.6002
0.6604	-0.5936	0.9569	-0.6071	0.0265	-0.6017	0.5909	-0.5994	0.5152	-0.5980
0.6608	-0.5941	0.9595	-0.6015	0.0297	-0.6058	0.5932	-0.5846	0.5176	-0.6070
0.6613	-0.5935	0.9621	-0.5874	0.4790	-0.5868	0.5955	-0.5826	0.5200	-0.6038
0.6626	-0.5916	0.9647	-0.5945	0.4815	-0.5871	0.5979	-0.5846	0.5224	-0.5991
0.6631	-0.5922	0.9673	-0.5925	0.4838	-0.5919	0.6002	-0.5854	0.5248	-0.6041
0.6635	-0.5974	0.9706	-0.6022	0.4862	-0.5955	0.6025	-0.5873	0.5271	-0.5960
0.6659	-0.5969	0.9733	-0.5945	0.4887	-0.5906	0.6051	-0.5851	0.5296	-0.5989
0.6664	-0.5976	0.9763	-0.5970	0.4936	-0.5948	0.6078	-0.5804	0.5319	-0.6014
0.6668	-0.5955	0.9790	-0.6045	0.4960	-0.5957	0.6102	-0.5854	0.5343	-0.5935
0.6681	-0.5952	0.9817	-0.6076	0.4985	-0.5988	0.6125	-0.5869	0.5367	-0.5912
0.6686	-0.5948	0.9843	-0.6001	0.5009	-0.598	0.6150	-0.5871	0.5390	-0.5925
0.6690	-0.5950	0.9872	-0.5998	0.5033	-0.6009	0.6173	-0.5881	0.5415	-0.6001
0.6716	-0.5974	0.9898	-0.6048	0.5055	-0.6000	0.6196	-0.5944	0.5439	-0.5953
0.6720	-0.5994	0.9925	-0.6033	0.5081	-0.6040	0.6219	-0.5941	0.5461	-0.5947
0.6725	-0.5993	0.9981	-0.6047	0.5106	-0.6059	0.6243	-0.5934	0.5485	-0.6066
0.6738	-0.6023	2450004 +		0.5128	-0.6078	0.6266	-0.5981	0.5509	-0.6050
0.6742	-0.6059	0.9288	-0.5948	0.5152	-0.6074	0.6289	-0.5956	0.5532	-0.6036
0.6746	-0.6084	0.9340	-0.5936	0.5175	-0.6060	0.6314	-0.5990	0.5555	-0.6100
0.6771	-0.6027	0.9373	-0.6118	0.5198	-0.6019	0.6337	-0.6034	0.5580	-0.6099
0.6776	-0.6035	0.9405	-0.6079	0.5221	-0.6014	0.6361	-0.6020	0.5604	-0.6058
0.6780	-0.6003	0.9435	-0.6013	0.5245	-0.6038	0.6381	-0.6002	0.5627	-0.6017
0.6793	-0.6041	0.9466	-0.6023	0.5267	-0.5968	0.6403	-0.6031	0.5651	-0.6041
0.6797	-0.6005	0.9494	-0.6195	0.5289	-0.5927	0.6426	-0.5983	0.5676	-0.5999
0.6802	-0.6035	0.9525	-0.6196	0.5311	-0.5921	0.6448	-0.5960	0.5698	-0.5994
0.6827	-0.6027	0.9558	-0.6115	0.5335	-0.5933	0.6470	-0.5936	0.5721	-0.5924
0.6832	-0.5985	0.9589	-0.5915	0.5359	-0.5892	0.6494	-0.5939	0.5746	-0.5880
0.6836	-0.5997	0.9617	-0.5827	0.5383	-0.5900	0.6518	-0.5869	0.5771	-0.5905
0.6848	-0.6037	0.9654	-0.5843	0.5406	-0.5954	0.6542	-0.5891	0.5795	-0.5954
0.6853	-0.6005	0.9687	-0.5972	0.5458	-0.6004	0.6565	-0.5827	0.5819	-0.5908
0.6857	-0.5985	0.9725	-0.5960	0.5481	-0.5985	0.6587	-0.5819	0.5841	-0.5901
0.6889	-0.5944	0.9755	-0.6084	0.5506	-0.5980	0.6610	-0.5819	0.5865	-0.5912
0.6893	-0.5951	0.9787	-0.5976	0.5529	-0.5942	0.6633	-0.5812	0.5889	-0.5922
0.6897	-0.5933	0.9816	-0.5966	0.5553	-0.5941	0.6657	-0.5852	0.5913	-0.5904

0.5939	-0.5966	0.6326	-0.5959	0.6893	-0.6065	0.8710	-0.6074	0.9355	-0.6116
0.5963	-0.5989	0.6352	-0.5959	0.6918	-0.6049	0.8801	-0.6037	0.9386	-0.6074
0.5987	-0.5957	0.6377	-0.5985	0.6944	-0.5959	0.8835	-0.6040	0.9421	-0.5988
0.6011	-0.5955	0.6401	-0.5937	0.6969	-0.5873	0.8870	-0.6001	0.9461	-0.6074
0.6034	-0.5904	0.6426	-0.5936	0.6995	-0.5862	0.8905	-0.6084	0.9495	-0.6095
0.6057	-0.5971	0.6450	-0.6008	0.7020	-0.5901	0.8941	-0.6036	0.9530	-0.6025
0.6081	-0.6041	0.6473	-0.5991	0.7043	-0.5837	0.8975	-0.6001	0.9563	-0.6033
0.6105	-0.5991	0.6549	-0.5974	2450007 +		0.9012	-0.6051	0.9595	-0.6065
0.6129	-0.5930	0.6574	-0.6004	0.8425	-0.5969	0.9051	-0.5986	0.9636	-0.6071
0.6153	-0.5962	0.6600	-0.6021	0.8464	-0.5952	0.9106	-0.5993	0.9667	-0.6011
0.6180	-0.5997	0.6623	-0.5984	0.8506	-0.5982	0.9144	-0.5985	0.9699	-0.5969
0.6202	-0.5980	0.6650	-0.5970	0.8541	-0.6031	0.9181	-0.6018	0.9732	-0.5942
0.6227	-0.6024	0.6675	-0.5955	0.8575	-0.5968	0.9212	-0.6040	0.9763	-0.5983
0.6251	-0.5968	0.6698	-0.6002	0.8608	-0.6048	0.9246	-0.6089	0.9796	-0.5907
0.6277	-0.5988	0.6722	-0.6024	0.8647	-0.6033	0.9282	-0.6025		
0.6300	-0.5958	0.6825	-0.6060	0.8682	-0.6084	0.9315	-0.6086		

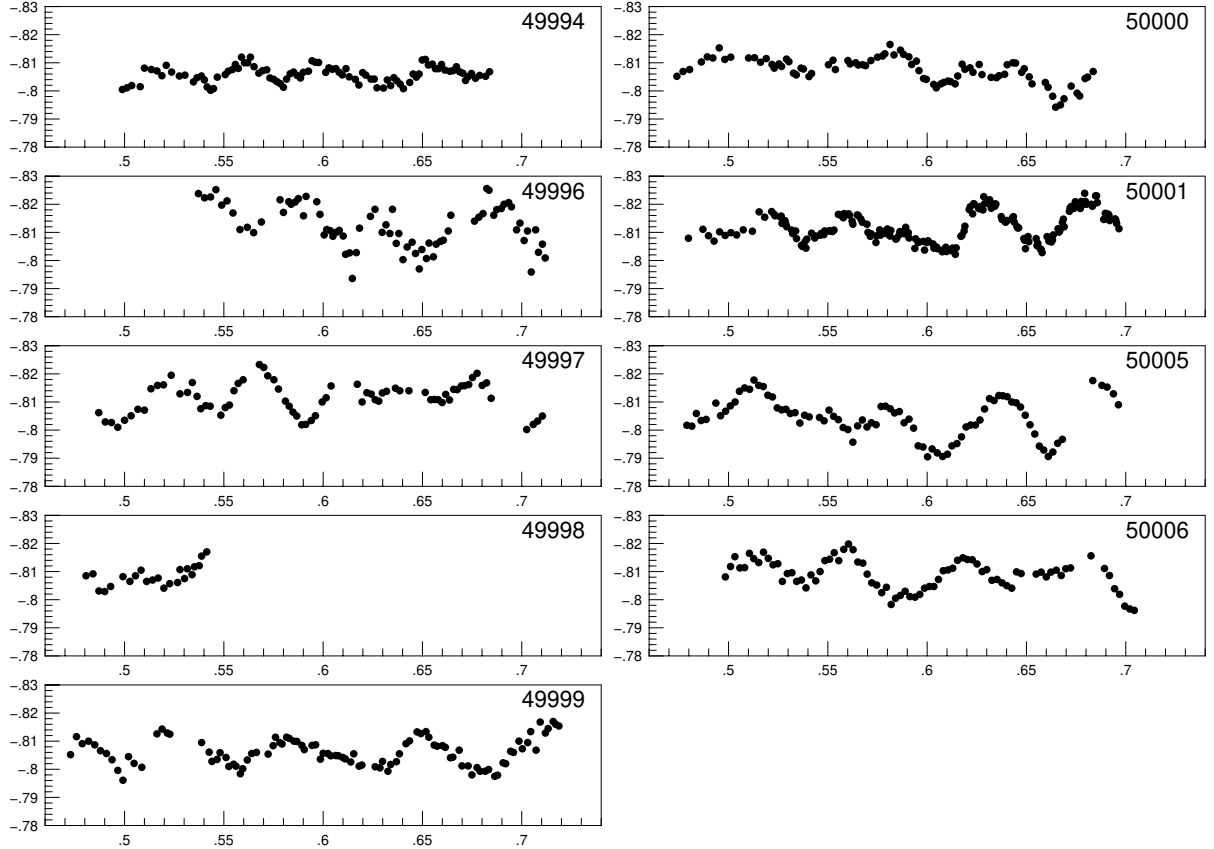


Figure 19: Light curves obtained in Spain in Strömgren v colour.

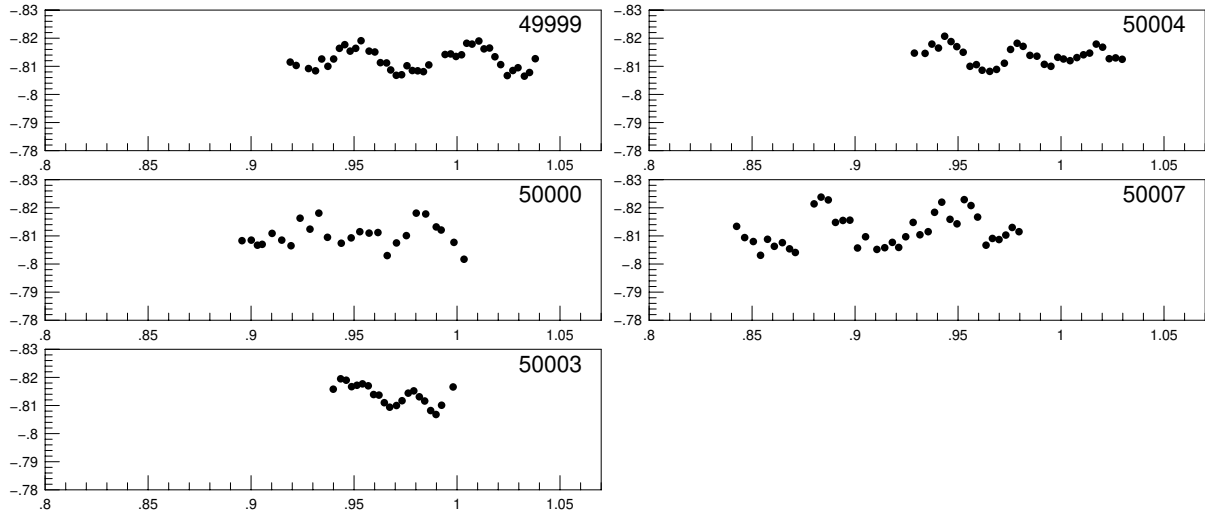


Figure 20: Light curves obtained in Mexico in Strömgren v colour.

Table 24. Strömgren v observations of 57 Tau by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

57 Tau - HR	0.5522	-0.8070	0.5960	-0.8102	0.6453	-0.8060	0.5403	-0.8223
1358	0.5543	-0.8076	0.5977	-0.8101	0.6469	-0.8049	0.5433	-0.8226
v colour	0.5558	-0.8094	0.6013	-0.8066	0.6483	-0.8060	0.5460	-0.8252
2449994 +	0.5573	-0.808	0.6029	-0.8082	0.6499	-0.8110	0.5489	-0.8197
0.4989 -0.8005	0.5589	-0.8120	0.6046	-0.8077	0.6515	-0.8112	0.5516	-0.8212
0.5012 -0.8011	0.5604	-0.8100	0.6064	-0.8079	0.6530	-0.8092	0.5546	-0.8169
0.5036 -0.8019	0.5620	-0.8100	0.6081	-0.8066	0.6550	-0.8095	0.5581	-0.8110
0.5079 -0.8015	0.5634	-0.8120	0.6096	-0.8057	0.6565	-0.8079	0.5618	-0.8118
0.5100 -0.8081	0.5652	-0.8086	0.6115	-0.8079	0.6580	-0.8079	0.5650	-0.8099
0.5135 -0.8076	0.5676	-0.8063	0.6131	-0.8050	0.6596	-0.8094	0.5689	-0.8137
0.5163 -0.8071	0.5695	-0.8072	0.6162	-0.8041	0.6613	-0.8074	0.5783	-0.8216
0.5188 -0.8054	0.5716	-0.8075	0.6180	-0.8021	0.6638	-0.8070	0.5800	-0.8171
0.5210 -0.8091	0.5732	-0.8046	0.6199	-0.8065	0.6654	-0.8072	0.5827	-0.8209
0.5237 -0.8067	0.5751	-0.8041	0.6215	-0.8056	0.6671	-0.8086	0.5839	-0.8200
0.5276 -0.8053	0.5767	-0.8033	0.6241	-0.8042	0.6687	-0.8068	0.5859	-0.8208
0.5304 -0.8056	0.5784	-0.8026	0.6257	-0.8042	0.6703	-0.8063	0.5875	-0.8220
0.5347 -0.8032	0.5800	-0.8013	0.6271	-0.8011	0.6717	-0.8037	0.5901	-0.8159
0.5365 -0.8047	0.5816	-0.8042	0.6304	-0.8010	0.6731	-0.8051	0.5914	-0.8228
0.5387 -0.8053	0.5834	-0.8061	0.6323	-0.8039	0.6747	-0.8062	0.5968	-0.8209
0.5402 -0.8039	0.5851	-0.8067	0.6340	-0.8019	0.6767	-0.8045	0.5984	-0.8164
0.5416 -0.8014	0.5869	-0.8055	0.6356	-0.8047	0.6788	-0.8055	0.6005	-0.8091
0.5433 -0.8002	0.5886	-0.8046	0.6371	-0.8036	0.6818	-0.8052	0.6018	-0.8110
0.5448 -0.8008	0.5900	-0.8066	0.6388	-0.8024	0.6838	-0.8068	0.6036	-0.8106
0.5467 -0.8049	0.5926	-0.8070	0.6404	-0.8008	2449996 +		0.6049	-0.8086
0.5507 -0.8058	0.5944	-0.8107	0.6436	-0.8030	0.5372	-0.8238	0.6068	-0.8101

0.6081	-0.8107	0.7104	-0.8058	0.6242	-0.8128	0.5316	-0.8110	0.5893	-0.8085
0.6101	-0.8087	0.7118	-0.8009	0.6262	-0.8108	0.5340	-0.8089	0.5905	-0.8070
0.6113	-0.8022	2449997 +		0.6280	-0.8103	0.5352	-0.8117	0.5944	-0.8085
0.6133	-0.8027	0.4870	-0.8062	0.6298	-0.8132	0.5376	-0.8121	0.5962	-0.8087
0.6147	-0.7936	0.4903	-0.8029	0.6319	-0.8138	0.5388	-0.8155	0.5986	-0.8036
0.6167	-0.8028	0.4934	-0.8027	0.6364	-0.8149	0.5414	-0.8170	0.6000	-0.8057
0.6183	-0.8115	0.4966	-0.8010	0.6386	-0.8140	2449999 +		0.6024	-0.8056
0.6238	-0.8157	0.5000	-0.8035	0.6432	-0.8140	0.4728	-0.8052	0.6038	-0.8048
0.6261	-0.8182	0.5033	-0.8051	0.6514	-0.8134	0.4758	-0.8116	0.6063	-0.8049
0.6297	-0.810	0.5067	-0.8074	0.6542	-0.8108	0.4787	-0.8091	0.6077	-0.8048
0.6316	-0.8127	0.5100	-0.8071	0.6561	-0.8109	0.4819	-0.8100	0.6099	-0.8042
0.6336	-0.8096	0.5133	-0.8147	0.6580	-0.8108	0.4850	-0.8087	0.6111	-0.8037
0.6349	-0.8182	0.5166	-0.8159	0.6599	-0.8098	0.4879	-0.8066	0.6139	-0.8026
0.6368	-0.8061	0.5196	-0.8161	0.6617	-0.8127	0.4909	-0.8056	0.6154	-0.8055
0.6381	-0.8096	0.5235	-0.8195	0.6636	-0.8107	0.4937	-0.8034	0.6181	-0.8011
0.6402	-0.8003	0.5279	-0.8129	0.6657	-0.8145	0.4966	-0.7996	0.6195	-0.8015
0.6423	-0.8048	0.5317	-0.8134	0.6675	-0.8144	0.4992	-0.7961	0.6262	-0.8009
0.6448	-0.8065	0.5341	-0.8169	0.6696	-0.8157	0.5020	-0.8045	0.6286	-0.8005
0.6465	-0.8025	0.5365	-0.8120	0.6713	-0.8158	0.5048	-0.8021	0.6299	-0.8028
0.6484	-0.7970	0.5384	-0.8076	0.6733	-0.8162	0.5087	-0.8007	0.6326	-0.7993
0.6497	-0.8039	0.5409	-0.8087	0.6752	-0.8187	0.5163	-0.8126	0.6340	-0.8017
0.6520	-0.8007	0.5431	-0.8085	0.6775	-0.8202	0.5189	-0.8143	0.6369	-0.8027
0.6533	-0.8062	0.5485	-0.8053	0.6801	-0.8159	0.5215	-0.8129	0.6384	-0.8055
0.6555	-0.8013	0.5507	-0.8080	0.6823	-0.8168	0.5228	-0.8125	0.6417	-0.8091
0.6569	-0.8058	0.5528	-0.8089	0.6846	-0.8113	0.5388	-0.8095	0.6435	-0.8101
0.6591	-0.8068	0.5551	-0.8140	0.7025	-0.8002	0.5426	-0.8061	0.6473	-0.8133
0.6605	-0.8072	0.5572	-0.8166	0.7058	-0.8020	0.5440	-0.8028	0.6492	-0.8127
0.6630	-0.8105	0.5597	-0.8179	0.7080	-0.8032	0.5466	-0.8035	0.6518	-0.8134
0.6643	-0.8161	0.5679	-0.8233	0.7104	-0.8050	0.5481	-0.8059	0.6532	-0.8114
0.6762	-0.8140	0.5701	-0.8223	2449998 +		0.5511	-0.8042	0.6559	-0.8086
0.6784	-0.8154	0.5721	-0.8193	0.4806	-0.8085	0.5525	-0.8010	0.6574	-0.8082
0.6805	-0.8167	0.5752	-0.8179	0.4841	-0.8092	0.5549	-0.8018	0.6601	-0.8084
0.6824	-0.8256	0.5775	-0.8146	0.4871	-0.8031	0.5561	-0.8011	0.6615	-0.8078
0.6835	-0.8250	0.5810	-0.8103	0.4900	-0.8029	0.5583	-0.7984	0.6641	-0.8041
0.6859	-0.8161	0.5829	-0.8085	0.4930	-0.8047	0.5595	-0.8002	0.6653	-0.8043
0.6874	-0.8181	0.5848	-0.8064	0.4992	-0.8082	0.5618	-0.8033	0.6685	-0.8068
0.6897	-0.8185	0.5867	-0.8050	0.5027	-0.8065	0.5640	-0.8056	0.6699	-0.8012
0.6911	-0.8200	0.5892	-0.8019	0.5055	-0.8085	0.5664	-0.8060	0.6730	-0.8012
0.6934	-0.8206	0.5912	-0.8020	0.5083	-0.8105	0.5723	-0.8054	0.6749	-0.7980
0.6948	-0.8191	0.5940	-0.8034	0.5111	-0.8065	0.5748	-0.8084	0.6775	-0.8006
0.6974	-0.8109	0.5961	-0.8051	0.5141	-0.8070	0.5760	-0.8114	0.6790	-0.7993
0.6991	-0.8133	0.5995	-0.8100	0.5169	-0.8077	0.5782	-0.8095	0.6816	-0.7993
0.7012	-0.8071	0.6015	-0.8115	0.5198	-0.8041	0.5793	-0.8090	0.6833	-0.7999
0.7029	-0.8105	0.6040	-0.8157	0.5227	-0.8057	0.5816	-0.8114	0.6864	-0.7975
0.7048	-0.7959	0.6172	-0.8163	0.5267	-0.8061	0.5829	-0.8110	0.6878	-0.7979
0.7070	-0.8109	0.6196	-0.8100	0.5279	-0.8107	0.5853	-0.8100	0.6906	-0.8023
0.7084	-0.8029	0.6220	-0.8133	0.5302	-0.8075	0.5868	-0.8099	0.6919	-0.8020

0.6944	-0.8064	0.0184	-0.8134	0.5833	-0.8128	0.9001	-0.8085	0.5323	-0.8096
0.6958	-0.8060	0.0212	-0.8106	0.5866	-0.8145	0.9031	-0.8067	0.5338	-0.8105
0.6986	-0.8100	0.0244	-0.8067	0.5881	-0.8130	0.9054	-0.8070	0.5342	-0.8078
0.7003	-0.8073	0.0271	-0.8085	0.5908	-0.8121	0.9102	-0.8109	0.5367	-0.8054
0.7030	-0.8095	0.0296	-0.8095	0.5922	-0.8094	0.9149	-0.8085	0.5372	-0.8050
0.7045	-0.8134	0.0327	-0.8065	0.5946	-0.8106	0.9194	-0.8065	0.5385	-0.8067
0.7072	-0.8068	0.0352	-0.8078	0.5959	-0.8072	0.9238	-0.8163	0.5390	-0.8044
0.7093	-0.8168	0.0380	-0.8127	0.5982	-0.8044	0.9286	-0.8124	0.5394	-0.8076
0.7119	-0.8129	0.4740	-0.8052	0.5996	-0.8041	0.9329	-0.8181	0.5418	-0.8097
0.7133	-0.8145	0.4771	-0.8069	0.6033	-0.8023	0.9371	-0.8095	0.5434	-0.8080
0.7158	-0.8170	0.4804	-0.8076	0.6046	-0.8011	0.9438	-0.8074	0.5438	-0.8087
0.7171	-0.8160	0.4863	-0.8103	0.6069	-0.8025	0.9486	-0.8093	0.5462	-0.8090
0.7187	-0.8154	0.4893	-0.8121	0.6083	-0.8030	0.9528	-0.8115	0.5466	-0.8096
0.9190	-0.8115	0.4921	-0.8117	0.6105	-0.8035	0.9573	-0.8110	0.5480	-0.8092
0.9219	-0.8103	0.4953	-0.8153	0.6118	-0.8033	0.9616	-0.8112	0.5484	-0.8105
0.9279	-0.8092	0.4981	-0.8112	0.6141	-0.8025	0.9661	-0.8030	0.5506	-0.8105
0.9313	-0.8084	0.5011	-0.8120	0.6154	-0.8053	0.9706	-0.8075	0.5511	-0.8106
0.9343	-0.8126	0.5101	-0.8117	0.6176	-0.8095	0.9754	-0.8101	0.5523	-0.8103
0.9373	-0.8100	0.5131	-0.8118	0.6190	-0.8077	0.9802	-0.8181	0.5531	-0.8108
0.9401	-0.8126	0.5161	-0.8102	0.6216	-0.8082	0.9848	-0.8178	0.5553	-0.8164
0.9429	-0.8164	0.5190	-0.8115	0.6231	-0.8066	0.9899	-0.8132	0.5562	-0.8162
0.9455	-0.8177	0.5219	-0.8094	0.6262	-0.8094	0.9923	-0.8121	0.5578	-0.8152
0.9481	-0.8154	0.5230	-0.8081	0.6276	-0.8058	0.9985	-0.8077	0.5582	-0.8167
0.9508	-0.8164	0.5254	-0.8096	0.6322	-0.8048	2450001 +		0.5604	-0.8166
0.9534	-0.8191	0.5267	-0.8087	0.6349	-0.8047	0.0034	-0.8017	0.5609	-0.8161
0.9573	-0.8154	0.5292	-0.8113	0.6362	-0.8054	0.4798	-0.8079	0.5622	-0.8140
0.9601	-0.8151	0.5304	-0.8104	0.6390	-0.8059	0.4871	-0.8111	0.5626	-0.8129
0.9628	-0.8113	0.5327	-0.8063	0.6403	-0.8093	0.4899	-0.8088	0.5648	-0.8162
0.9658	-0.8112	0.5341	-0.8057	0.6431	-0.8100	0.4927	-0.8069	0.5653	-0.8160
0.9678	-0.8087	0.5365	-0.8081	0.6445	-0.8099	0.4955	-0.8102	0.5666	-0.8148
0.9705	-0.8068	0.5377	-0.8078	0.6476	-0.8066	0.4983	-0.8089	0.5674	-0.8136
0.9731	-0.8070	0.5405	-0.8051	0.6489	-0.8079	0.5012	-0.8099	0.5697	-0.8129
0.9757	-0.8102	0.5418	-0.8062	0.6514	-0.8050	0.5041	-0.8091	0.5702	-0.8100
0.9783	-0.8085	0.5503	-0.8093	0.6528	-0.8025	0.5074	-0.8109	0.5714	-0.8086
0.9809	-0.8084	0.5526	-0.8109	0.6595	-0.8030	0.5120	-0.8104	0.5718	-0.8095
0.9837	-0.8081	0.5538	-0.8076	0.6609	-0.8013	0.5154	-0.8173	0.5742	-0.8064
0.9863	-0.8105	0.5601	-0.8108	0.6632	-0.7981	0.5182	-0.8154	0.5746	-0.8088
0.9942	-0.8142	0.5612	-0.8096	0.6647	-0.7942	0.5217	-0.8174	0.5761	-0.8109
0.9969	-0.8144	0.5640	-0.8100	0.6671	-0.7950	0.5230	-0.8164	0.5765	-0.8090
0.9995	-0.8135	0.5653	-0.8092	0.6689	-0.7972	0.5234	-0.8159	0.5788	-0.8104
2450000 +		0.5675	-0.8093	0.6725	-0.8017	0.5260	-0.8155	0.5792	-0.8096
0.0022	-0.8141	0.5690	-0.8090	0.6755	-0.7992	0.5265	-0.8158	0.5800	-0.8112
0.0047	-0.8182	0.5717	-0.8108	0.6768	-0.7982	0.5269	-0.8132	0.5813	-0.8087
0.0073	-0.8179	0.5750	-0.8120	0.6795	-0.8044	0.5284	-0.8142	0.5817	-0.8107
0.0106	-0.8190	0.5775	-0.8124	0.6808	-0.8049	0.5288	-0.8130	0.5842	-0.8076
0.0131	-0.8162	0.5787	-0.8132	0.6836	-0.8069	0.5293	-0.8120	0.5846	-0.8078
0.0158	-0.8165	0.5813	-0.8165	0.8956	-0.8083	0.5318	-0.8108	0.5859	-0.8091

0.5863	-0.8103	0.6377	-0.8146	0.6832	-0.8193	0.9589	-0.8106	0.5359	-0.8025
0.5887	-0.8095	0.6381	-0.8145	0.6836	-0.8198	0.9617	-0.8086	0.5383	-0.8053
0.5892	-0.8118	0.6395	-0.8136	0.6848	-0.8230	0.9654	-0.8082	0.5406	-0.8047
0.5905	-0.8099	0.6399	-0.8142	0.6853	-0.8230	0.9687	-0.8089	0.5458	-0.8045
0.5909	-0.8080	0.6403	-0.8142	0.6857	-0.8206	0.9725	-0.8111	0.5481	-0.8033
0.5938	-0.8043	0.6429	-0.8151	0.6889	-0.8146	0.9755	-0.8160	0.5506	-0.8071
0.5942	-0.8077	0.6434	-0.8156	0.6893	-0.8147	0.9787	-0.8182	0.5529	-0.8049
0.5955	-0.8064	0.6438	-0.8137	0.6897	-0.8168	0.9816	-0.8171	0.5553	-0.8037
0.5960	-0.8066	0.6452	-0.8121	0.6911	-0.8165	0.9849	-0.8139	0.5577	-0.8009
0.5982	-0.8068	0.6456	-0.8116	0.6915	-0.8162	0.9883	-0.8136	0.5601	-0.8002
0.5987	-0.8037	0.6461	-0.8116	0.6919	-0.8142	0.9919	-0.8107	0.5626	-0.7957
0.5999	-0.8064	0.6487	-0.8078	0.6946	-0.8148	0.9951	-0.8100	0.5650	-0.8015
0.6005	-0.8070	0.6491	-0.8072	0.6950	-0.8144	0.9984	-0.8132	0.5674	-0.8036
0.6029	-0.8059	0.6495	-0.8042	0.6954	-0.8132	2450005 +		0.5697	-0.8011
0.6034	-0.8044	0.6508	-0.8085	0.6966	-0.8113	0.0012	-0.8126	0.5719	-0.8026
0.6047	-0.8048	0.6512	-0.8067	2450003 +		0.0044	-0.8120	0.5743	-0.8019
0.6052	-0.8042	0.6549	-0.8078	0.9399	-0.8158	0.0077	-0.8131	0.5768	-0.8084
0.6076	-0.8031	0.6553	-0.8053	0.9435	-0.8195	0.0109	-0.8141	0.5790	-0.8085
0.6080	-0.8037	0.6557	-0.8061	0.9462	-0.8190	0.0139	-0.8147	0.5814	-0.8076
0.6094	-0.8047	0.6570	-0.8041	0.9488	-0.8167	0.0171	-0.8179	0.5836	-0.8061
0.6098	-0.8032	0.6574	-0.8039	0.9514	-0.8172	0.0202	-0.8168	0.5860	-0.8066
0.6123	-0.8035	0.6579	-0.8028	0.9541	-0.8177	0.0234	-0.8127	0.5884	-0.8026
0.6128	-0.8044	0.6604	-0.8085	0.9569	-0.8170	0.0265	-0.8130	0.5909	-0.8039
0.6142	-0.8022	0.6608	-0.8083	0.9595	-0.8139	0.0297	-0.8125	0.5932	-0.8007
0.6146	-0.8045	0.6613	-0.8069	0.9621	-0.8137	0.4790	-0.8017	0.5955	-0.7944
0.6170	-0.8086	0.6626	-0.8066	0.9647	-0.8110	0.4815	-0.8014	0.5979	-0.7940
0.6175	-0.8089	0.6631	-0.8073	0.9673	-0.8094	0.4838	-0.8059	0.6002	-0.7905
0.6186	-0.8105	0.6635	-0.8091	0.9706	-0.8100	0.4862	-0.8034	0.6025	-0.7933
0.6190	-0.8122	0.6659	-0.8113	0.9733	-0.8117	0.4887	-0.8038	0.6051	-0.7919
0.6212	-0.8181	0.6664	-0.8101	0.9763	-0.8144	0.4936	-0.8096	0.6078	-0.7906
0.6217	-0.8191	0.6668	-0.8106	0.9790	-0.8152	0.4960	-0.8051	0.6102	-0.7914
0.6229	-0.8166	0.6681	-0.8135	0.9817	-0.8131	0.4985	-0.8067	0.6125	-0.7944
0.6234	-0.8202	0.6686	-0.8147	0.9843	-0.8116	0.5009	-0.8086	0.6150	-0.7952
0.6238	-0.8200	0.6690	-0.8120	0.9872	-0.8082	0.5033	-0.8100	0.6173	-0.7976
0.6259	-0.8186	0.6716	-0.8175	0.9898	-0.8068	0.5055	-0.8138	0.6196	-0.8011
0.6263	-0.8184	0.6720	-0.8187	0.9925	-0.8101	0.5081	-0.8150	0.6219	-0.8018
0.6268	-0.8192	0.6725	-0.8192	0.9981	-0.8166	0.5106	-0.8145	0.6243	-0.8018
0.6281	-0.8180	0.6738	-0.8185	2450004 +		0.5128	-0.8178	0.6266	-0.8036
0.6285	-0.8227	0.6742	-0.8196	0.9288	-0.8147	0.5152	-0.8159	0.6289	-0.8075
0.6289	-0.8202	0.6746	-0.8209	0.9340	-0.8146	0.5175	-0.8155	0.6314	-0.8112
0.6315	-0.8216	0.6771	-0.8185	0.9373	-0.8179	0.5198	-0.8124	0.6337	-0.8105
0.6319	-0.8197	0.6776	-0.8210	0.9405	-0.8165	0.5221	-0.8118	0.6361	-0.8123
0.6323	-0.8186	0.6780	-0.8197	0.9435	-0.8207	0.5245	-0.8079	0.6381	-0.8122
0.6337	-0.8201	0.6793	-0.8239	0.9466	-0.8188	0.5267	-0.8072	0.6403	-0.8119
0.6341	-0.8193	0.6797	-0.8210	0.9494	-0.8170	0.5289	-0.8074	0.6426	-0.8100
0.6346	-0.8201	0.6802	-0.8200	0.9525	-0.8150	0.5311	-0.8059	0.6448	-0.8097
0.6373	-0.8156	0.6827	-0.8200	0.9558	-0.8100	0.5335	-0.8062	0.6470	-0.8082

0.6494 -0.8053	0.5271 -0.8065	0.5913 -0.8011	0.6623 -0.8098	0.8941 -0.8155
0.6518 -0.8019	0.5296 -0.8093	0.5939 -0.8009	0.6650 -0.8105	0.8975 -0.8156
0.6542 -0.7986	0.5319 -0.8096	0.5963 -0.8019	0.6675 -0.8086	0.9012 -0.8057
0.6565 -0.7943	0.5343 -0.8065	0.5987 -0.8041	0.6698 -0.8110	0.9051 -0.8097
0.6587 -0.7929	0.5367 -0.8070	0.6011 -0.8047	0.6722 -0.8113	0.9106 -0.8052
0.6610 -0.7906	0.5390 -0.8042	0.6034 -0.8047	0.6825 -0.8156	0.9144 -0.8058
0.6633 -0.7922	0.5415 -0.8088	0.6057 -0.8072	0.6893 -0.8111	0.9181 -0.8077
0.6657 -0.7953	0.5439 -0.8067	0.6081 -0.8103	0.6918 -0.8086	0.9212 -0.8059
0.6681 -0.7967	0.5461 -0.8100	0.6105 -0.8106	0.6944 -0.8039	0.9246 -0.8097
0.6834 -0.8176	0.5485 -0.8139	0.6129 -0.8112	0.6969 -0.8019	0.9282 -0.8148
0.6880 -0.8159	0.5509 -0.8144	0.6153 -0.8140	0.6995 -0.7977	0.9315 -0.8104
0.6906 -0.8153	0.5532 -0.8167	0.6180 -0.8149	0.7020 -0.7967	0.9355 -0.8115
0.6938 -0.8129	0.5555 -0.8139	0.6202 -0.8143	0.7043 -0.7962	0.9386 -0.8184
0.6963 -0.8090	0.5580 -0.8179	0.6227 -0.8142	2450007 +	0.9421 -0.8220
2450006 +	0.5604 -0.8198	0.6251 -0.8127	0.8425 -0.8134	0.9461 -0.8159
0.4984 -0.8081	0.5627 -0.8178	0.6277 -0.8100	0.8464 -0.8094	0.9495 -0.8143
0.5010 -0.8118	0.5651 -0.8134	0.6300 -0.8107	0.8506 -0.8080	0.9530 -0.8229
0.5032 -0.8153	0.5676 -0.8130	0.6326 -0.8069	0.8541 -0.8031	0.9563 -0.8208
0.5057 -0.8113	0.5698 -0.8091	0.6352 -0.8072	0.8575 -0.8088	0.9595 -0.8167
0.5081 -0.8114	0.5721 -0.8060	0.6377 -0.8060	0.8608 -0.8063	0.9636 -0.8067
0.5105 -0.8165	0.5746 -0.8052	0.6401 -0.8050	0.8647 -0.8076	0.9667 -0.8091
0.5127 -0.8146	0.5771 -0.8025	0.6426 -0.8041	0.8682 -0.8054	0.9699 -0.8087
0.5152 -0.8132	0.5795 -0.8044	0.6450 -0.8099	0.8710 -0.8041	0.9732 -0.8103
0.5176 -0.8169	0.5819 -0.7983	0.6473 -0.8093	0.8801 -0.8214	0.9763 -0.8130
0.5200 -0.8147	0.5841 -0.8005	0.6549 -0.8091	0.8835 -0.8238	0.9796 -0.8115
0.5224 -0.8124	0.5865 -0.8015	0.6574 -0.8098	0.8870 -0.8228	
0.5248 -0.8128	0.5889 -0.8030	0.6600 -0.8081	0.8905 -0.8148	

Table 25. Strömgren b - y observations of 57 Tau by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

57 Tau - HR	0.5347 -0.1252	0.5634 -0.1281	0.5926 -0.1295	0.6241 -0.1277
1358	0.5365 -0.1260	0.5652 -0.1253	0.5944 -0.1283	0.6257 -0.1264
b-y colour	0.5387 -0.1260	0.5676 -0.1265	0.5960 -0.1275	0.6271 -0.1239
2449994 +	0.5402 -0.1276	0.5695 -0.1268	0.5977 -0.1270	0.6304 -0.1232
0.4989 -0.1256	0.5416 -0.1256	0.5716 -0.1264	0.6013 -0.1292	0.6323 -0.1247
0.5012 -0.1259	0.5433 -0.1262	0.5732 -0.1267	0.6029 -0.1287	0.6340 -0.1232
0.5036 -0.1269	0.5448 -0.1262	0.5751 -0.1257	0.6046 -0.1289	0.6356 -0.1263
0.5079 -0.1259	0.5467 -0.1264	0.5767 -0.1275	0.6064 -0.1273	0.6371 -0.1262
0.5100 -0.1257	0.5507 -0.1251	0.5784 -0.1282	0.6081 -0.1289	0.6388 -0.1251
0.5135 -0.1273	0.5522 -0.1225	0.5800 -0.1265	0.6096 -0.1278	0.6404 -0.1262
0.5163 -0.1271	0.5543 -0.1237	0.5816 -0.1260	0.6115 -0.1260	0.6436 -0.1277
0.5188 -0.1254	0.5558 -0.1268	0.5834 -0.1278	0.6131 -0.1285	0.6453 -0.1265
0.5210 -0.1255	0.5573 -0.1288	0.5851 -0.1274	0.6162 -0.1281	0.6469 -0.1255
0.5237 -0.1264	0.5589 -0.1293	0.5869 -0.1271	0.6180 -0.1280	0.6483 -0.1276
0.5276 -0.1294	0.5604 -0.1295	0.5886 -0.1243	0.6199 -0.1302	0.6499 -0.1284
0.5304 -0.1285	0.5620 -0.1272	0.5900 -0.1286	0.6215 -0.1292	0.6515 -0.1288

0.6530	-0.1281	0.6580	-0.1290	0.6638	-0.1265	0.6687	-0.1304	0.6731	-0.1272
0.6550	-0.1286	0.6596	-0.1297	0.6654	-0.1281	0.6703	-0.1290	0.6747	-0.1265
0.6565	-0.1290	0.6613	-0.1243	0.6671	-0.1280	0.6717	-0.1250	0.6767	-0.1275

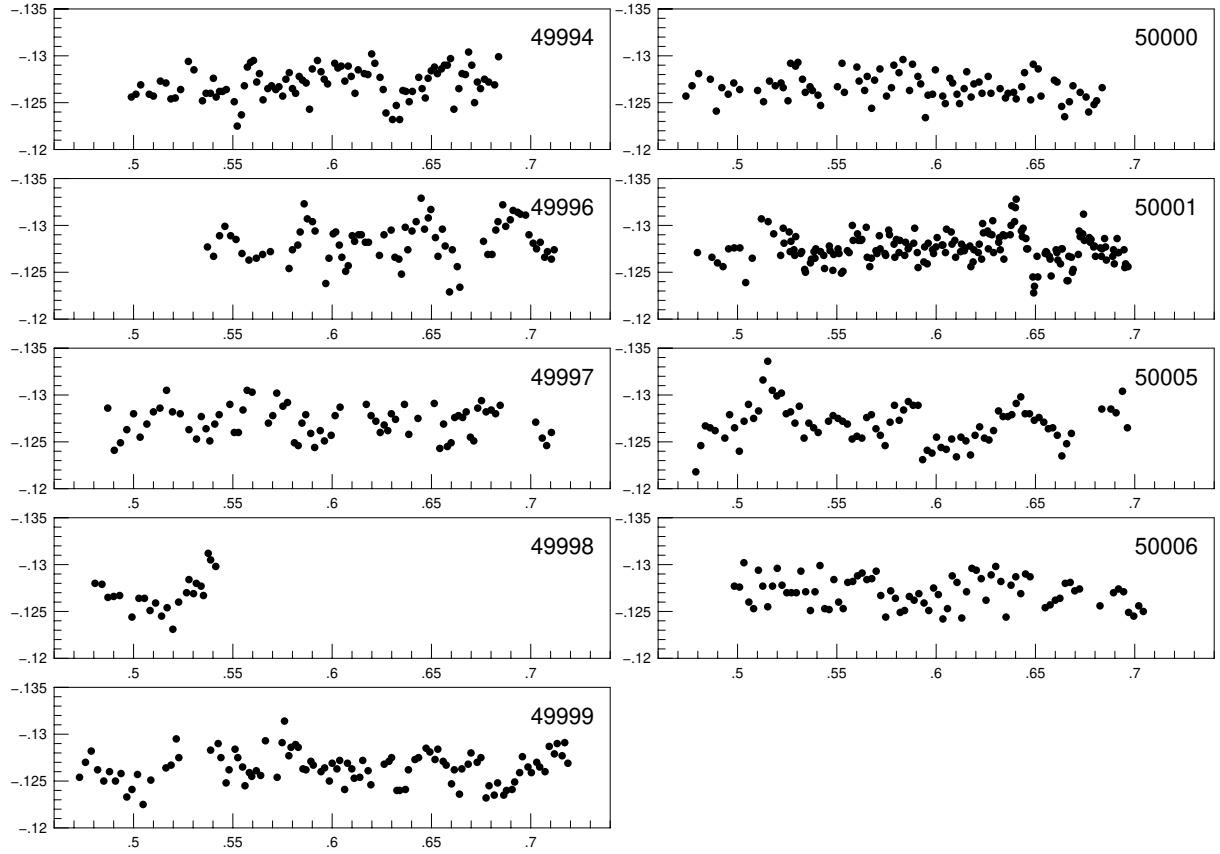


Figure 21: Light curves obtained in Spain in Strömgen $b-y$ colour.

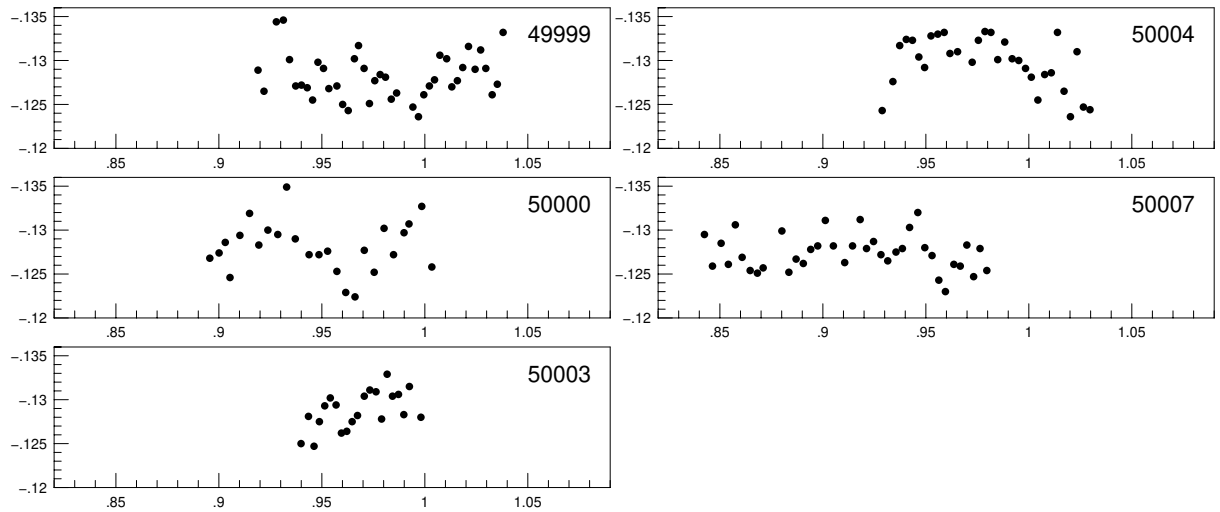


Figure 22: Light curves obtained in Mexico in Strömgen $b-y$ colour.

0.6788 -0.1272	0.6448 -0.1329	0.5341 -0.1277	0.6696 -0.1255	0.5020 -0.1257
0.6818 -0.1269	0.6465 -0.1296	0.5365 -0.1264	0.6713 -0.1251	0.5048 -0.1225
0.6838 -0.1299	0.6484 -0.1308	0.5384 -0.1251	0.6733 -0.1286	0.5087 -0.1251
2449996 +	0.6497 -0.1317	0.5409 -0.1269	0.6752 -0.1294	0.5163 -0.1264
0.5372 -0.1277	0.6520 -0.1287	0.5431 -0.1279	0.6775 -0.1282	0.5189 -0.1267
0.5403 -0.1267	0.6533 -0.1267	0.5485 -0.1290	0.6801 -0.1284	0.5215 -0.1295
0.5433 -0.1289	0.6555 -0.1296	0.5507 -0.1260	0.6823 -0.1280	0.5228 -0.1275
0.5460 -0.1299	0.6569 -0.1278	0.5528 -0.1260	0.6846 -0.1289	0.5388 -0.1283
0.5489 -0.1289	0.6591 -0.1229	0.5551 -0.1284	0.7025 -0.1271	0.5426 -0.1290
0.5516 -0.1285	0.6605 -0.1274	0.5572 -0.1305	0.7058 -0.1254	0.5440 -0.1275
0.5546 -0.1270	0.6630 -0.1256	0.5597 -0.1303	0.7080 -0.1246	0.5466 -0.1248
0.5581 -0.1263	0.6643 -0.1234	0.5679 -0.1270	0.7104 -0.1260	0.5481 -0.1262
0.5618 -0.1265	0.6762 -0.1283	0.5701 -0.1278	2449998 +	0.5511 -0.1284
0.5650 -0.1269	0.6784 -0.1269	0.5721 -0.1302	0.4806 -0.1280	0.5525 -0.1275
0.5689 -0.1272	0.6805 -0.1269	0.5752 -0.1288	0.4841 -0.1279	0.5549 -0.1265
0.5783 -0.1254	0.6824 -0.1295	0.5775 -0.1292	0.4871 -0.1265	0.5561 -0.1245
0.5800 -0.1274	0.6835 -0.1304	0.5810 -0.1249	0.4900 -0.1266	0.5583 -0.1259
0.5827 -0.1279	0.6859 -0.1322	0.5829 -0.1246	0.4930 -0.1267	0.5595 -0.1255
0.5839 -0.1293	0.6874 -0.1299	0.5848 -0.1270	0.4992 -0.1244	0.5618 -0.1261
0.5859 -0.1323	0.6897 -0.1306	0.5867 -0.1279	0.5027 -0.1264	0.5640 -0.1256
0.5875 -0.1307	0.6911 -0.1316	0.5892 -0.1259	0.5055 -0.1264	0.5664 -0.1293
0.5901 -0.1304	0.6934 -0.1314	0.5912 -0.1244	0.5083 -0.1251	0.5723 -0.1254
0.5914 -0.1294	0.6948 -0.1312	0.5940 -0.1262	0.5111 -0.1259	0.5748 -0.1291
0.5968 -0.1238	0.6974 -0.1311	0.5961 -0.1251	0.5141 -0.1245	0.5760 -0.1314
0.5984 -0.1265	0.6991 -0.1290	0.5995 -0.1257	0.5169 -0.1254	0.5782 -0.1277
0.6005 -0.1291	0.7012 -0.1281	0.6015 -0.1278	0.5198 -0.1231	0.5793 -0.1286
0.6018 -0.1293	0.7029 -0.1275	0.6040 -0.1287	0.5227 -0.1260	0.5816 -0.1289
0.6036 -0.1279	0.7048 -0.1282	0.6172 -0.1290	0.5267 -0.1270	0.5829 -0.1286
0.6049 -0.1266	0.7070 -0.1266	0.6196 -0.1278	0.5279 -0.1284	0.5853 -0.1263
0.6068 -0.1251	0.7084 -0.1272	0.6220 -0.1272	0.5302 -0.1269	0.5868 -0.1262
0.6081 -0.1257	0.7104 -0.1264	0.6242 -0.1260	0.5316 -0.128	0.5893 -0.1271
0.6101 -0.1289	0.7118 -0.1274	0.6262 -0.1268	0.5340 -0.1277	0.5905 -0.1267
0.6113 -0.1283	2449997 +	0.6280 -0.1262	0.5352 -0.1267	0.5944 -0.1260
0.6133 -0.1290	0.4870 -0.1286	0.6298 -0.1280	0.5376 -0.1312	0.5962 -0.1264
0.6147 -0.1290	0.4903 -0.1241	0.6319 -0.1274	0.5388 -0.1305	0.5986 -0.1250
0.6167 -0.1282	0.4934 -0.1249	0.6364 -0.1290	0.5414 -0.1298	0.6000 -0.1269
0.6183 -0.1282	0.4966 -0.1263	0.6386 -0.1258	2449999 +	0.6024 -0.1263
0.6238 -0.1268	0.5000 -0.1280	0.6432 -0.1275	0.4728 -0.1254	0.6038 -0.1272
0.6261 -0.1290	0.5033 -0.1255	0.6514 -0.1291	0.4758 -0.1270	0.6063 -0.1241
0.6297 -0.1295	0.5067 -0.1269	0.6542 -0.1243	0.4787 -0.1282	0.6077 -0.1269
0.6316 -0.1266	0.5100 -0.1282	0.6561 -0.1269	0.4819 -0.1262	0.6099 -0.1263
0.6336 -0.1264	0.5133 -0.1286	0.6580 -0.1245	0.4850 -0.1250	0.6111 -0.1253
0.6349 -0.1248	0.5166 -0.1305	0.6599 -0.1249	0.4879 -0.1260	0.6139 -0.1254
0.6368 -0.1298	0.5196 -0.1282	0.6617 -0.1276	0.4909 -0.1250	0.6154 -0.1272
0.6381 -0.1274	0.5235 -0.1280	0.6636 -0.1278	0.4937 -0.1258	0.6181 -0.1261
0.6402 -0.1294	0.5279 -0.1263	0.6657 -0.1276	0.4966 -0.1233	0.6195 -0.1246
0.6423 -0.1304	0.5317 -0.1253	0.6675 -0.1282	0.4992 -0.1241	0.6262 -0.1268

0.6286	-0.1271	0.9343	-0.1301	0.5101	-0.1263	0.6176	-0.1256	0.9754	-0.1252
0.6299	-0.1275	0.9373	-0.1271	0.5131	-0.1251	0.6190	-0.1270	0.9802	-0.1302
0.6326	-0.1240	0.9401	-0.1272	0.5161	-0.1273	0.6216	-0.1272	0.9848	-0.1272
0.6340	-0.1240	0.9429	-0.1269	0.5190	-0.1268	0.6231	-0.1260	0.9899	-0.1297
0.6369	-0.1241	0.9455	-0.1255	0.5219	-0.1271	0.6262	-0.1278	0.9923	-0.1307
0.6384	-0.1262	0.9481	-0.1298	0.5230	-0.1266	0.6276	-0.1260	0.9985	-0.1327
0.6417	-0.1273	0.9508	-0.1291	0.5254	-0.1252	0.6322	-0.1265	2450001	+
0.6435	-0.1275	0.9534	-0.1268	0.5267	-0.1292	0.6349	-0.1255	0.0034	-0.1258
0.6473	-0.1285	0.9573	-0.1271	0.5292	-0.1289	0.6362	-0.1260	0.4798	-0.1271
0.6492	-0.1281	0.9601	-0.1250	0.5304	-0.1293	0.6390	-0.1261	0.4871	-0.1266
0.6518	-0.1273	0.9628	-0.1243	0.5327	-0.1275	0.6403	-0.1254	0.4899	-0.1260
0.6532	-0.1284	0.9658	-0.1302	0.5341	-0.1261	0.6431	-0.1267	0.4927	-0.1256
0.6559	-0.1271	0.9678	-0.1317	0.5365	-0.1267	0.6445	-0.1282	0.4955	-0.1275
0.6574	-0.1267	0.9705	-0.1291	0.5377	-0.1263	0.6476	-0.1253	0.4983	-0.1276
0.6601	-0.1247	0.9731	-0.1251	0.5405	-0.1258	0.6489	-0.1291	0.5012	-0.1276
0.6615	-0.1262	0.9757	-0.1277	0.5418	-0.1247	0.6514	-0.1286	0.5041	-0.1239
0.6641	-0.1236	0.9783	-0.1284	0.5503	-0.1267	0.6528	-0.1257	0.5074	-0.1265
0.6653	-0.1263	0.9809	-0.1281	0.5526	-0.1292	0.6595	-0.1274	0.5120	-0.1307
0.6685	-0.1268	0.9837	-0.1256	0.5538	-0.1261	0.6609	-0.1272	0.5154	-0.1304
0.6699	-0.1280	0.9863	-0.1263	0.5601	-0.1288	0.6632	-0.1246	0.5182	-0.1291
0.6730	-0.1270	0.9942	-0.1247	0.5612	-0.1273	0.6647	-0.1235	0.5217	-0.1268
0.6749	-0.1275	0.9969	-0.1236	0.5640	-0.1263	0.6671	-0.1251	0.5230	-0.1297
0.6775	-0.1232	0.9995	-0.1261	0.5653	-0.1278	0.6689	-0.1268	0.5234	-0.1281
0.6790	-0.1245	2450000	+	0.5675	-0.1244	0.6725	-0.1261	0.5260	-0.1293
0.6816	-0.1235	0.0022	-0.1271	0.5690	-0.1274	0.6755	-0.1256	0.5265	-0.1272
0.6833	-0.1248	0.0047	-0.1278	0.5717	-0.1286	0.6768	-0.1240	0.5269	-0.1283
0.6864	-0.1235	0.0073	-0.1306	0.5750	-0.1257	0.6795	-0.1248	0.5284	-0.1274
0.6878	-0.1240	0.0106	-0.1302	0.5775	-0.1266	0.6808	-0.1252	0.5288	-0.1268
0.6906	-0.1241	0.0131	-0.1270	0.5787	-0.1290	0.6836	-0.1266	0.5293	-0.1288
0.6919	-0.1249	0.0158	-0.1277	0.5813	-0.1282	0.8956	-0.1268	0.5318	-0.1270
0.6944	-0.1259	0.0184	-0.1292	0.5833	-0.1296	0.9001	-0.1274	0.5323	-0.1272
0.6958	-0.1276	0.0212	-0.1316	0.5866	-0.1263	0.9031	-0.1286	0.5338	-0.1253
0.6986	-0.1265	0.0244	-0.1290	0.5881	-0.1291	0.9054	-0.1246	0.5342	-0.1250
0.7003	-0.1259	0.0271	-0.1312	0.5908	-0.1278	0.9102	-0.1294	0.5367	-0.1260
0.7030	-0.1270	0.0296	-0.1291	0.5922	-0.1270	0.9149	-0.1319	0.5372	-0.1264
0.7045	-0.1265	0.0327	-0.1261	0.5946	-0.1234	0.9194	-0.1283	0.5385	-0.1272
0.7072	-0.1260	0.0352	-0.1273	0.5959	-0.1258	0.9238	-0.1300	0.5390	-0.1265
0.7093	-0.1287	0.0380	-0.1332	0.5982	-0.1259	0.9286	-0.1295	0.5394	-0.1275
0.7119	-0.1279	0.4740	-0.1257	0.5996	-0.1285	0.9329	-0.1349	0.5418	-0.1272
0.7133	-0.1290	0.4771	-0.1268	0.6033	-0.1257	0.9371	-0.1290	0.5434	-0.1268
0.7158	-0.1277	0.4804	-0.1281	0.6046	-0.1249	0.9438	-0.1272	0.5438	-0.1254
0.7171	-0.1291	0.4863	-0.1275	0.6069	-0.1276	0.9486	-0.1272	0.5462	-0.1278
0.7187	-0.1269	0.4893	-0.1241	0.6083	-0.1271	0.9528	-0.1276	0.5466	-0.1273
0.9190	-0.1289	0.4921	-0.1266	0.6105	-0.1259	0.9573	-0.1253	0.5480	-0.1252
0.9219	-0.1265	0.4953	-0.1259	0.6118	-0.1249	0.9616	-0.1229	0.5484	-0.1269
0.9279	-0.1344	0.4981	-0.1271	0.6141	-0.1265	0.9661	-0.1224	0.5506	-0.1275
0.9313	-0.1346	0.5011	-0.1264	0.6154	-0.1283	0.9706	-0.1277	0.5511	-0.1270

0.5523	-0.1249	0.6076	-0.1293	0.6553	-0.1272	0.9435	-0.1281	0.0109	-0.1286
0.5531	-0.1251	0.6080	-0.1280	0.6557	-0.1271	0.9462	-0.1247	0.0139	-0.1332
0.5553	-0.1273	0.6094	-0.1284	0.6570	-0.1267	0.9488	-0.1275	0.0171	-0.1265
0.5562	-0.1271	0.6098	-0.1266	0.6574	-0.1264	0.9514	-0.1293	0.0202	-0.1236
0.5578	-0.1300	0.6123	-0.1272	0.6579	-0.1246	0.9541	-0.1302	0.0234	-0.1310
0.5582	-0.1284	0.6128	-0.1280	0.6604	-0.1274	0.9569	-0.1294	0.0265	-0.1247
0.5604	-0.1291	0.6142	-0.1273	0.6608	-0.1271	0.9595	-0.1262	0.0297	-0.1244
0.5609	-0.1284	0.6146	-0.1276	0.6613	-0.1263	0.9621	-0.1264	0.4790	-0.1218
0.5622	-0.1284	0.6170	-0.1278	0.6626	-0.1259	0.9647	-0.1275	0.4815	-0.1246
0.5626	-0.1285	0.6175	-0.1256	0.6631	-0.1275	0.9673	-0.1282	0.4838	-0.1267
0.5648	-0.1298	0.6186	-0.1261	0.6635	-0.1275	0.9706	-0.1304	0.4862	-0.1265
0.5653	-0.1266	0.6190	-0.1274	0.6659	-0.1241	0.9733	-0.1311	0.4887	-0.1262
0.5666	-0.1256	0.6212	-0.1271	0.6664	-0.1241	0.9763	-0.1309	0.4936	-0.1254
0.5674	-0.1265	0.6217	-0.1280	0.6668	-0.1267	0.979	-0.1278	0.4960	-0.1279
0.5697	-0.1273	0.6229	-0.1264	0.6681	-0.1266	0.9817	-0.1329	0.4985	-0.1265
0.5702	-0.1270	0.6234	-0.1302	0.6686	-0.1250	0.9843	-0.1304	0.5009	-0.1240
0.5714	-0.1289	0.6238	-0.1292	0.6690	-0.1253	0.9872	-0.1306	0.5033	-0.1272
0.5718	-0.1275	0.6259	-0.1294	0.6716	-0.1269	0.9898	-0.1283	0.5055	-0.1290
0.5742	-0.1270	0.6263	-0.1275	0.6720	-0.1294	0.9925	-0.1315	0.5081	-0.1275
0.5746	-0.1268	0.6268	-0.1291	0.6725	-0.1288	0.9981	-0.1280	0.5106	-0.1283
0.5761	-0.1295	0.6281	-0.1290	0.6738	-0.1291	2450004 +		0.5128	-0.1316
0.5765	-0.1290	0.6285	-0.1305	0.6742	-0.1312	0.9288	-0.1243	0.5152	-0.1336
0.5788	-0.1280	0.6289	-0.1271	0.6746	-0.1284	0.9340	-0.1276	0.5175	-0.1305
0.5792	-0.1266	0.6315	-0.1282	0.6771	-0.1287	0.9373	-0.1317	0.5198	-0.1299
0.5800	-0.1285	0.6319	-0.1287	0.6776	-0.1282	0.9405	-0.1324	0.5221	-0.1302
0.5813	-0.1271	0.6323	-0.1274	0.6780	-0.1285	0.9435	-0.1323	0.5245	-0.1280
0.5817	-0.1284	0.6337	-0.1290	0.6793	-0.1277	0.9466	-0.1304	0.5267	-0.1282
0.5842	-0.1268	0.6341	-0.1264	0.6797	-0.1278	0.9494	-0.1292	0.5289	-0.1270
0.5846	-0.1282	0.6346	-0.1289	0.6802	-0.1267	0.9525	-0.1328	0.5311	-0.1288
0.5859	-0.1275	0.6373	-0.1290	0.6827	-0.1276	0.9558	-0.1330	0.5335	-0.1254
0.5863	-0.1277	0.6377	-0.1300	0.6832	-0.1267	0.9589	-0.1332	0.5359	-0.1270
0.5887	-0.1281	0.6381	-0.1321	0.6836	-0.1275	0.9617	-0.1308	0.5383	-0.1265
0.5892	-0.1297	0.6395	-0.1304	0.6848	-0.1286	0.9654	-0.1310	0.5406	-0.1260
0.5905	-0.1271	0.6399	-0.1319	0.6853	-0.1277	0.9687	-0.1366	0.5458	-0.1272
0.5909	-0.1255	0.6403	-0.1328	0.6857	-0.1263	0.9725	-0.1298	0.5481	-0.1278
0.5938	-0.1261	0.6429	-0.1294	0.6889	-0.1267	0.9755	-0.1323	0.5506	-0.1275
0.5942	-0.1277	0.6434	-0.1288	0.6893	-0.1274	0.9787	-0.1333	0.5529	-0.1272
0.5955	-0.1259	0.6438	-0.1297	0.6897	-0.1259	0.9816	-0.1332	0.5553	-0.1269
0.5960	-0.1281	0.6452	-0.1286	0.6911	-0.1286	0.9849	-0.1301	0.5577	-0.1253
0.5982	-0.1274	0.6456	-0.1275	0.6915	-0.1271	0.9883	-0.1321	0.5601	-0.1256
0.5987	-0.1270	0.6461	-0.1275	0.6919	-0.1271	0.9919	-0.1302	0.5626	-0.1254
0.5999	-0.1277	0.6487	-0.1245	0.6946	-0.1274	0.9951	-0.1300	0.5650	-0.1276
0.6005	-0.1287	0.6491	-0.1228	0.6950	-0.1255	0.9984	-0.1291	0.5674	-0.1279
0.6029	-0.1279	0.6495	-0.1235	0.6954	-0.1259	2450005 +		0.5697	-0.1264
0.6034	-0.1279	0.6508	-0.1267	0.6966	-0.1256	0.0012	-0.1281	0.5719	-0.1257
0.6047	-0.1271	0.6512	-0.1245	2450003 +		0.0044	-0.1255	0.5743	-0.1246
0.6052	-0.1296	0.6549	-0.1270	0.9399	-0.1250	0.0077	-0.1284	0.5768	-0.1271

0.5790 -0.1289	0.6565 -0.1264	0.5485 -0.1284	0.6277 -0.1289	0.8682 -0.1251
0.5814 -0.1273	0.6587 -0.1265	0.5509 -0.1260	0.6300 -0.1298	0.8710 -0.1257
0.5836 -0.1284	0.6610 -0.1257	0.5532 -0.1253	0.6326 -0.1282	0.8801 -0.1299
0.5860 -0.1293	0.6633 -0.1235	0.5555 -0.1281	0.6352 -0.1244	0.8835 -0.1252
0.5884 -0.1289	0.6657 -0.1248	0.5580 -0.1282	0.6377 -0.1278	0.8870 -0.1267
0.5909 -0.1289	0.6681 -0.1259	0.5604 -0.1288	0.6401 -0.1287	0.8905 -0.1262
0.5932 -0.1231	0.6834 -0.1285	0.5627 -0.1291	0.6426 -0.1269	0.8941 -0.1278
0.5955 -0.1241	0.6880 -0.1285	0.5651 -0.1284	0.6450 -0.1290	0.8975 -0.1282
0.5979 -0.1238	0.6906 -0.1281	0.5676 -0.1285	0.6473 -0.1287	0.9012 -0.1311
0.6002 -0.1255	0.6938 -0.1304	0.5698 -0.1293	0.6549 -0.1254	0.9051 -0.1282
0.6025 -0.1244	0.6963 -0.1265	0.5721 -0.1267	0.6574 -0.1257	0.9106 -0.1263
0.6051 -0.1242	2450006 +	0.5746 -0.1244	0.6600 -0.1262	0.9144 -0.1282
0.6078 -0.1253	0.4984 -0.1277	0.5771 -0.1272	0.6623 -0.1264	0.9181 -0.1312
0.6102 -0.1234	0.5010 -0.1276	0.5795 -0.1264	0.6650 -0.1280	0.9212 -0.1279
0.6125 -0.1255	0.5032 -0.1302	0.5819 -0.1249	0.6675 -0.1281	0.9246 -0.1287
0.6150 -0.1251	0.5057 -0.1260	0.5841 -0.1251	0.6698 -0.1272	0.9282 -0.1272
0.6173 -0.1236	0.5081 -0.1253	0.5865 -0.1266	0.6722 -0.1274	0.9315 -0.1265
0.6196 -0.1257	0.5105 -0.1294	0.5889 -0.1262	0.6825 -0.1256	0.9355 -0.1275
0.6219 -0.1266	0.5127 -0.1277	0.5913 -0.1269	0.6893 -0.1270	0.9386 -0.1279
0.6243 -0.1254	0.5152 -0.1255	0.5939 -0.1259	0.6918 -0.1274	0.9421 -0.1303
0.6266 -0.1252	0.5176 -0.1277	0.5963 -0.1251	0.6944 -0.1271	0.9461 -0.1320
0.6289 -0.1262	0.5200 -0.1296	0.5987 -0.1275	0.6969 -0.1249	0.9495 -0.1280
0.6314 -0.1283	0.5224 -0.1278	0.6011 -0.1268	0.6995 -0.1245	0.9530 -0.1271
0.6337 -0.1277	0.5248 -0.1270	0.6034 -0.1242	0.7020 -0.1256	0.9563 -0.1243
0.6361 -0.1277	0.5271 -0.1270	0.6057 -0.1253	0.7043 -0.1250	0.9595 -0.1230
0.6381 -0.1279	0.5296 -0.1270	0.6081 -0.1288	2450007 +	0.9636 -0.1261
0.6403 -0.1291	0.5319 -0.1293	0.6105 -0.1281	0.8425 -0.1295	0.9667 -0.1259
0.6426 -0.1298	0.5343 -0.1271	0.6129 -0.1243	0.8464 -0.1259	0.9699 -0.1283
0.6448 -0.1280	0.5367 -0.1251	0.6153 -0.1271	0.8506 -0.1285	0.9732 -0.1247
0.6470 -0.1280	0.5390 -0.1271	0.6180 -0.1296	0.8541 -0.1261	0.9763 -0.1279
0.6494 -0.1273	0.5415 -0.1299	0.6202 -0.1294	0.8575 -0.1306	0.9796 -0.1254
0.6518 -0.1276	0.5439 -0.1253	0.6227 -0.1285	0.8608 -0.1269	
0.6542 -0.1271	0.5461 -0.1252	0.6251 -0.1262	0.8647 -0.1254	

Table 26. Strömgren m_1 observations of 57 Tau by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

57 Tau - HR	0.5163 +0.0212	0.5416 +0.0201	0.5604 +0.0234	0.5784 +0.0230
1358	0.5188 +0.0193	0.5433 +0.0190	0.5620 +0.0204	0.5800 +0.0212
m_1 index	0.5210 +0.0176	0.5448 +0.0188	0.5634 +0.0205	0.5816 +0.0191
2449994 +	0.5237 +0.0185	0.5467 +0.0194	0.5652 +0.0173	0.5834 +0.0210
0.4989 +0.0196	0.5276 +0.0245	0.5507 +0.0182	0.5676 +0.0194	0.5851 +0.0200
0.5012 +0.0205	0.5304 +0.0240	0.5522 +0.0165	0.5695 +0.0202	0.5869 +0.0211
0.5036 +0.0206	0.5347 +0.0201	0.5543 +0.0179	0.5716 +0.0213	0.5886 +0.0184
0.5079 +0.0202	0.5365 +0.0196	0.5558 +0.0210	0.5732 +0.0208	0.5900 +0.0214
0.5100 +0.0180	0.5387 +0.0197	0.5573 +0.0218	0.5751 +0.0198	0.5926 +0.0241
0.5135 +0.0208	0.5402 +0.0229	0.5589 +0.0227	0.5767 +0.0215	0.5944 +0.0212

0.5960 +0.0209 0.5977 +0.0201 0.6013 +0.0232 0.6029 +0.0241 0.6046 +0.0234

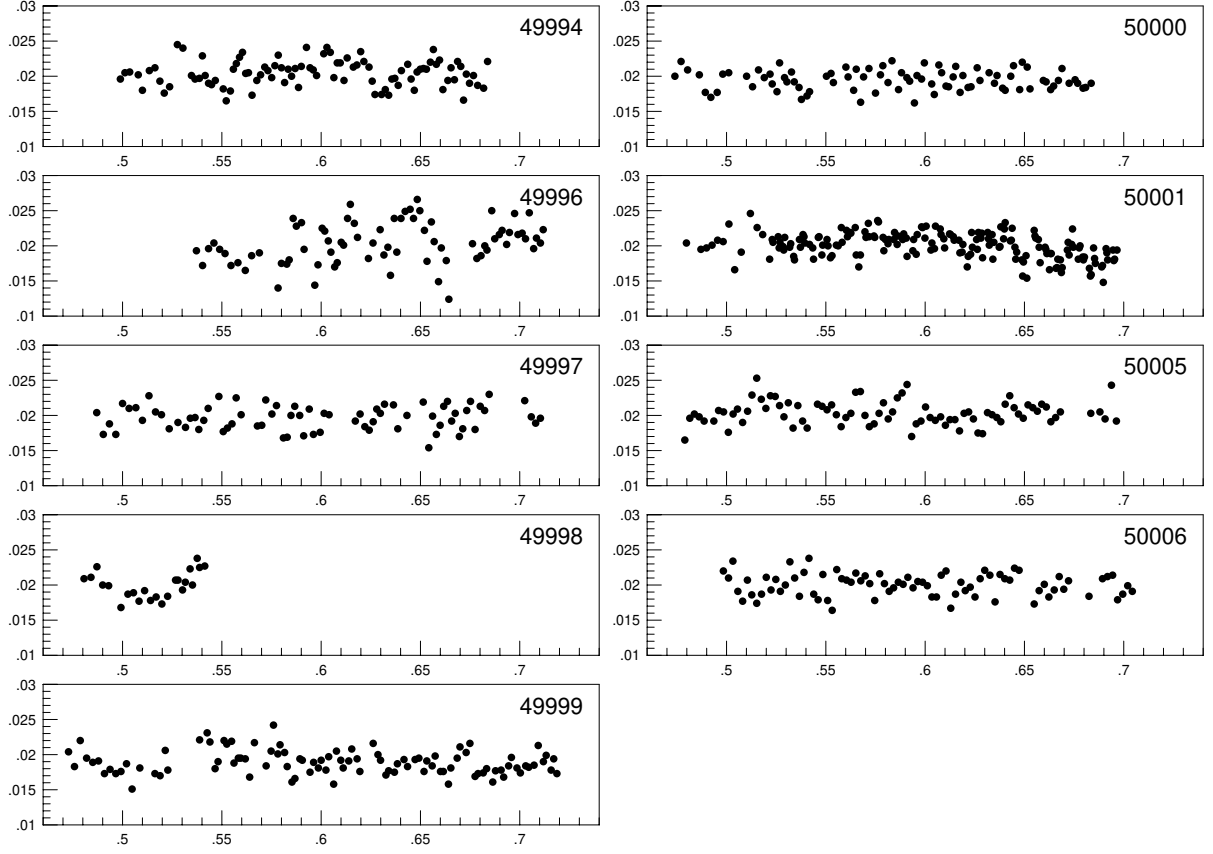


Figure 23: Light curves obtained in Spain in Strömgren m_1 colour.

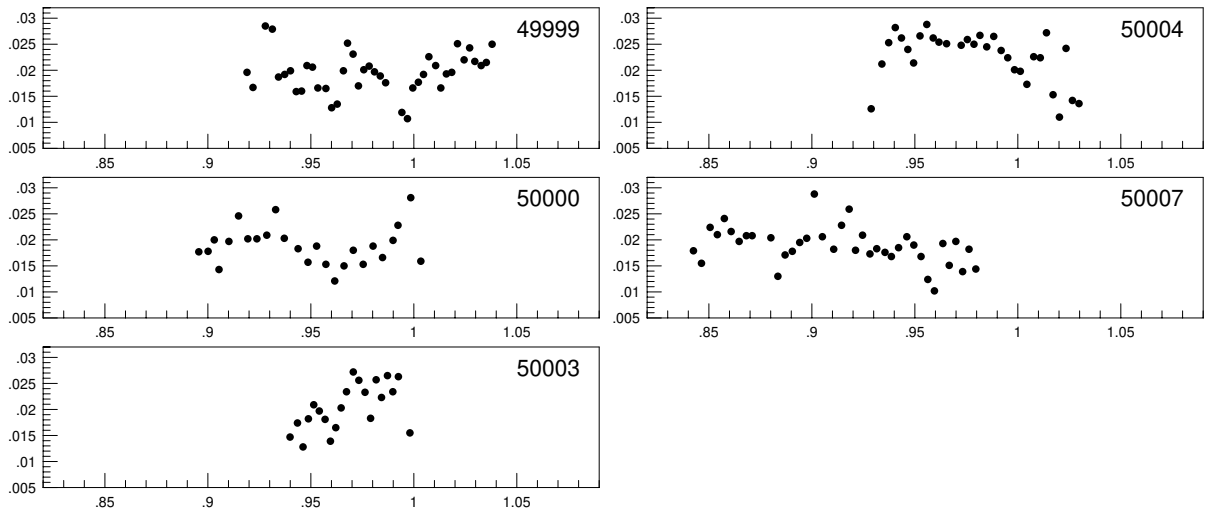


Figure 24: Light curves obtained in Mexico in Strömgren m_1 colour.

0.6064 +0.0198	0.5460 +0.0204	0.6569 +0.0206	0.5528 +0.0182	0.6846 +0.0230
0.6081 +0.0219	0.5489 +0.0195	0.6591 +0.0149	0.5551 +0.0188	0.7025 +0.0221
0.6096 +0.0219	0.5516 +0.0189	0.6605 +0.0197	0.5572 +0.0225	0.7058 +0.0198
0.6115 +0.0194	0.5546 +0.0172	0.6630 +0.0179	0.5597 +0.0201	0.7080 +0.0189
0.6131 +0.0226	0.5581 +0.0176	0.6643 +0.0124	0.5679 +0.0185	0.7104 +0.0196
0.6162 +0.0213	0.5618 +0.0165	0.6762 +0.0203	0.5701 +0.0186	2449998 +
0.6180 +0.0216	0.5650 +0.0186	0.6784 +0.0182	0.5721 +0.0222	0.4806 +0.0209
0.6199 +0.0235	0.5689 +0.0190	0.6805 +0.0186	0.5752 +0.0202	0.4841 +0.0211
0.6215 +0.0221	0.5783 +0.0140	0.6824 +0.0200	0.5775 +0.0214	0.4871 +0.0226
0.6241 +0.0213	0.5800 +0.0175	0.6835 +0.0194	0.5810 +0.0168	0.4900 +0.0200
0.6257 +0.0193	0.5827 +0.0174	0.6859 +0.0250	0.5829 +0.0169	0.4930 +0.0199
0.6271 +0.0174	0.5839 +0.0180	0.6874 +0.0210	0.5848 +0.0200	0.4992 +0.0168
0.6304 +0.0174	0.5859 +0.0239	0.6897 +0.0216	0.5867 +0.0213	0.5027 +0.0187
0.6323 +0.0181	0.5875 +0.0228	0.6911 +0.0222	0.5892 +0.0200	0.5055 +0.0189
0.6340 +0.0173	0.5901 +0.0233	0.6934 +0.0202	0.5912 +0.0171	0.5083 +0.0177
0.6356 +0.0196	0.5914 +0.0195	0.6948 +0.0219	0.5940 +0.0209	0.5111 +0.0192
0.6371 +0.0197	0.5968 +0.0144	0.6974 +0.0246	0.5961 +0.0173	0.5141 +0.0178
0.6388 +0.0187	0.5984 +0.0173	0.6991 +0.0216	0.5995 +0.0176	0.5169 +0.0183
0.6404 +0.0208	0.6005 +0.0225	0.7012 +0.0218	0.6015 +0.0203	0.5198 +0.0173
0.6436 +0.0217	0.6018 +0.0221	0.7029 +0.0210	0.6040 +0.0201	0.5227 +0.0184
0.6453 +0.0196	0.6036 +0.0207	0.7048 +0.0247	0.6172 +0.0192	0.5267 +0.0207
0.6469 +0.0180	0.6049 +0.0191	0.7070 +0.0196	0.6196 +0.0202	0.5279 +0.0207
0.6483 +0.0206	0.6068 +0.0170	0.7084 +0.0211	0.6220 +0.0184	0.5302 +0.0193
0.6499 +0.0210	0.6081 +0.0176	0.7104 +0.0204	0.6242 +0.0179	0.5316 +0.0204
0.6515 +0.0211	0.6101 +0.0205	0.7118 +0.0223	0.6262 +0.0191	0.5340 +0.0223
0.6530 +0.0210	0.6113 +0.0201	2449997 +	0.6280 +0.0209	0.5352 +0.0200
0.6550 +0.0220	0.6133 +0.0239	0.4870 +0.0204	0.6298 +0.0203	0.5376 +0.0238
0.6565 +0.0238	0.6147 +0.0259	0.4903 +0.0173	0.6319 +0.0216	0.5388 +0.0225
0.6580 +0.0217	0.6167 +0.0232	0.4934 +0.0188	0.6364 +0.0215	0.5414 +0.0227
0.6596 +0.0223	0.6183 +0.0212	0.4966 +0.0173	0.6386 +0.0181	2449999 +
0.6613 +0.0181	0.6238 +0.0182	0.5000 +0.0217	0.6432 +0.0200	0.4728 +0.0204
0.6638 +0.0194	0.6261 +0.0204	0.5033 +0.0210	0.6514 +0.0219	0.4758 +0.0183
0.6654 +0.0212	0.6297 +0.0223	0.5067 +0.0211	0.6542 +0.0154	0.4787 +0.0220
0.6671 +0.0195	0.6316 +0.0187	0.5100 +0.0193	0.6561 +0.0199	0.4819 +0.0195
0.6687 +0.0221	0.6336 +0.0198	0.5133 +0.0228	0.6580 +0.0173	0.4850 +0.0189
0.6703 +0.0214	0.6349 +0.0158	0.5166 +0.0205	0.6599 +0.0186	0.4879 +0.0191
0.6717 +0.0166	0.6368 +0.0239	0.5196 +0.0201	0.6617 +0.0213	0.4909 +0.0173
0.6731 +0.0203	0.6381 +0.0191	0.5235 +0.0181	0.6636 +0.0220	0.4937 +0.0179
0.6747 +0.0190	0.6402 +0.0239	0.5279 +0.0190	0.6657 +0.0192	0.4966 +0.0173
0.6767 +0.0201	0.6423 +0.0249	0.5317 +0.0183	0.6675 +0.0203	0.4992 +0.0176
0.6788 +0.0187	0.6448 +0.0252	0.5341 +0.0196	0.6696 +0.0170	0.5020 +0.0187
0.6818 +0.0183	0.6465 +0.0239	0.5365 +0.0197	0.6713 +0.0181	0.5048 +0.0151
0.6838 +0.0221	0.6484 +0.0266	0.5384 +0.0180	0.6733 +0.0207	0.5087 +0.0181
2449996 +	0.6497 +0.0250	0.5409 +0.0193	0.6752 +0.0220	0.5163 +0.0173
0.5372 +0.0193	0.6520 +0.0222	0.5431 +0.0210	0.6775 +0.0180	0.5189 +0.0170
0.5403 +0.0172	0.6533 +0.0178	0.5485 +0.0227	0.6801 +0.0213	0.5215 +0.0206
0.5433 +0.0196	0.6555 +0.0234	0.5507 +0.0177	0.6823 +0.0207	0.5228 +0.0178

0.5388 +0.0221	0.6435 +0.0183	0.9534 +0.0166	0.5267 +0.0219	0.6349 +0.0190
0.5426 +0.0231	0.6473 +0.0193	0.9573 +0.0165	0.5292 +0.0198	0.6362 +0.0201
0.5440 +0.0218	0.6492 +0.0195	0.9601 +0.0128	0.5304 +0.0192	0.6390 +0.0183
0.5466 +0.0180	0.6518 +0.0176	0.9628 +0.0135	0.5327 +0.0206	0.6403 +0.0180
0.5481 +0.0190	0.6532 +0.0191	0.9658 +0.0199	0.5341 +0.0192	0.6431 +0.0200
0.5511 +0.0220	0.6559 +0.0184	0.9678 +0.0252	0.5365 +0.0184	0.6445 +0.0215
0.5525 +0.0215	0.6574 +0.0198	0.9705 +0.0231	0.5377 +0.0167	0.6476 +0.0181
0.5549 +0.0219	0.6601 +0.0176	0.9731 +0.0170	0.5405 +0.0172	0.6489 +0.0220
0.5561 +0.0188	0.6615 +0.0176	0.9757 +0.0201	0.5418 +0.0178	0.6514 +0.0213
0.5583 +0.0195	0.6641 +0.0158	0.9783 +0.0208	0.5503 +0.0200	0.6528 +0.0182
0.5595 +0.0195	0.6653 +0.0181	0.9809 +0.0197	0.5526 +0.0204	0.6595 +0.0194
0.5618 +0.0194	0.6685 +0.0195	0.9837 +0.0189	0.5538 +0.0191	0.6609 +0.0192
0.5640 +0.0168	0.6699 +0.0211	0.9863 +0.0176	0.5601 +0.0213	0.6632 +0.0181
0.5664 +0.0217	0.6730 +0.0203	0.9942 +0.0119	0.5612 +0.0199	0.6647 +0.0186
0.5723 +0.0184	0.6749 +0.0216	0.9969 +0.0107	0.5640 +0.0180	0.6671 +0.0194
0.5748 +0.0205	0.6775 +0.0169	0.9995 +0.0166	0.5653 +0.0210	0.6689 +0.0211
0.5760 +0.0242	0.6790 +0.0173	2450000 +	0.5675 +0.0163	0.6725 +0.0190
0.5782 +0.0201	0.6816 +0.0174	0.0022 +0.0177	0.5690 +0.0199	0.6755 +0.0195
0.5793 +0.0214	0.6833 +0.0180	0.0047 +0.0192	0.5717 +0.0211	0.6768 +0.0190
0.5816 +0.0203	0.6864 +0.0161	0.0073 +0.0226	0.5750 +0.0176	0.6795 +0.0183
0.5829 +0.0183	0.6878 +0.0177	0.0106 +0.0209	0.5775 +0.0202	0.6808 +0.0184
0.5853 +0.0161	0.6906 +0.0178	0.0131 +0.0166	0.5787 +0.0215	0.6836 +0.0190
0.5868 +0.0166	0.6919 +0.0168	0.0158 +0.0193	0.5813 +0.0191	0.8956 +0.0177
0.5893 +0.0194	0.6944 +0.0184	0.0184 +0.0196	0.5833 +0.0222	0.9001 +0.0178
0.5905 +0.0192	0.6958 +0.0196	0.0212 +0.0251	0.5866 +0.0181	0.9031 +0.0200
0.5944 +0.0175	0.6986 +0.0181	0.0244 +0.0220	0.5881 +0.0205	0.9054 +0.0143
0.5962 +0.0189	0.7003 +0.0174	0.0271 +0.0243	0.5908 +0.0198	0.9102 +0.0197
0.5986 +0.0181	0.7030 +0.0184	0.0296 +0.0217	0.5922 +0.0193	0.9149 +0.0246
0.6000 +0.0192	0.7045 +0.0182	0.0327 +0.0209	0.5946 +0.0162	0.9194 +0.0202
0.6024 +0.0178	0.7072 +0.0185	0.0352 +0.0215	0.5959 +0.0201	0.9238 +0.0202
0.6038 +0.0197	0.7093 +0.0213	0.0380 +0.0250	0.5982 +0.0196	0.9286 +0.0209
0.6063 +0.0158	0.7119 +0.0190	0.4740 +0.0200	0.5996 +0.0219	0.9329 +0.0258
0.6077 +0.0205	0.7133 +0.0199	0.4771 +0.0221	0.6033 +0.0189	0.9371 +0.0203
0.6099 +0.0192	0.7158 +0.0178	0.4804 +0.0209	0.6046 +0.0174	0.9438 +0.0183
0.6111 +0.0181	0.7171 +0.0194	0.4863 +0.0202	0.6069 +0.0216	0.9486 +0.0157
0.6139 +0.0191	0.7187 +0.0173	0.4893 +0.0177	0.6083 +0.0205	0.9528 +0.0188
0.6154 +0.0208	0.9190 +0.0196	0.4921 +0.0170	0.6105 +0.0186	0.9573 +0.0153
0.6181 +0.0194	0.9219 +0.0167	0.4953 +0.0177	0.6118 +0.0185	0.9616 +0.0121
0.6195 +0.0176	0.9279 +0.0285	0.4981 +0.0203	0.6141 +0.0199	0.9661 +0.0150
0.6262 +0.0216	0.9313 +0.0279	0.5011 +0.0205	0.6154 +0.0214	0.9706 +0.0180
0.6286 +0.0200	0.9343 +0.0187	0.5101 +0.0200	0.6176 +0.0177	0.9754 +0.0153
0.6299 +0.0192	0.9373 +0.0192	0.5131 +0.0185	0.6190 +0.0201	0.9802 +0.0188
0.6326 +0.0171	0.9401 +0.0199	0.5161 +0.0209	0.6216 +0.0184	0.9848 +0.0166
0.6340 +0.0177	0.9429 +0.0159	0.5190 +0.0198	0.6231 +0.0185	0.9899 +0.0199
0.6369 +0.0175	0.9455 +0.0160	0.5219 +0.0203	0.6262 +0.0212	0.9923 +0.0228
0.6384 +0.0187	0.9481 +0.0209	0.5230 +0.0189	0.6276 +0.0194	0.9985 +0.0281
0.6417 +0.0193	0.9508 +0.0206	0.5254 +0.0178	0.6322 +0.0205	2450001 +

0.0034 +0.0159	0.5609 +0.0213	0.6146 +0.0208	0.6613 +0.0189	0.9621 +0.0165
0.4798 +0.0204	0.5622 +0.0219	0.6170 +0.0208	0.6626 +0.0166	0.9647 +0.0203
0.4871 +0.0195	0.5626 +0.0218	0.6175 +0.0190	0.6631 +0.0189	0.9673 +0.0234
0.4899 +0.0197	0.5648 +0.0226	0.6186 +0.0191	0.6635 +0.0189	0.9706 +0.0272
0.4927 +0.0201	0.5653 +0.0187	0.6190 +0.0202	0.6659 +0.0168	0.9733 +0.0256
0.4955 +0.0208	0.5666 +0.0170	0.6212 +0.0170	0.6664 +0.0169	0.9763 +0.0233
0.4983 +0.0206	0.5674 +0.0187	0.6217 +0.0185	0.6668 +0.0181	0.9790 +0.0183
0.5012 +0.0231	0.5697 +0.0220	0.6229 +0.0188	0.6681 +0.0180	0.9817 +0.0257
0.5041 +0.0166	0.5702 +0.0212	0.6234 +0.0219	0.6686 +0.0162	0.9843 +0.0223
0.5074 +0.0191	0.5714 +0.0232	0.6238 +0.0198	0.6690 +0.0169	0.9872 +0.0265
0.5120 +0.0246	0.5718 +0.0213	0.6259 +0.0209	0.6716 +0.0194	0.9898 +0.0234
0.5154 +0.0226	0.5742 +0.0214	0.6263 +0.0195	0.6720 +0.0205	0.9925 +0.0263
0.5182 +0.0216	0.5746 +0.0212	0.6268 +0.0219	0.6725 +0.0187	0.9981 +0.0155
0.5217 +0.0181	0.5761 +0.0236	0.6281 +0.0211	0.6738 +0.0202	2450004 +
0.5230 +0.0209	0.5765 +0.0234	0.6285 +0.0218	0.6742 +0.0224	0.9288 +0.0126
0.5234 +0.0205	0.5788 +0.0212	0.6289 +0.0183	0.6746 +0.0198	0.9340 +0.0212
0.5260 +0.0213	0.5792 +0.0193	0.6315 +0.0219	0.6771 +0.0181	0.9373 +0.0253
0.5265 +0.0197	0.5800 +0.0209	0.6319 +0.0210	0.6776 +0.0197	0.9405 +0.0282
0.5269 +0.0205	0.5813 +0.0203	0.6323 +0.0201	0.6780 +0.0200	0.9435 +0.0262
0.5284 +0.0199	0.5817 +0.0209	0.6337 +0.0216	0.6793 +0.0184	0.9466 +0.0240
0.5288 +0.0194	0.5842 +0.0209	0.6341 +0.0181	0.6797 +0.0180	0.9494 +0.0214
0.5293 +0.0212	0.5846 +0.0219	0.6346 +0.0205	0.6802 +0.0184	0.9525 +0.0266
0.5318 +0.0198	0.5859 +0.0202	0.6373 +0.0198	0.6827 +0.0168	0.9558 +0.0288
0.5323 +0.0203	0.5863 +0.0214	0.6377 +0.0199	0.6832 +0.0157	0.9589 +0.0262
0.5338 +0.0185	0.5887 +0.0209	0.6381 +0.0227	0.6836 +0.0159	0.9617 +0.0254
0.5342 +0.0180	0.5892 +0.0217	0.6395 +0.0210	0.6848 +0.0197	0.9654 +0.0251
0.5367 +0.0209	0.5905 +0.0211	0.6399 +0.0224	0.6853 +0.0182	0.9687 +0.0337
0.5372 +0.0198	0.5909 +0.0185	0.6403 +0.0233	0.6857 +0.0175	0.9725 +0.0248
0.5385 +0.0216	0.5938 +0.0193	0.6429 +0.0207	0.6889 +0.0170	0.9755 +0.0259
0.5390 +0.0213	0.5942 +0.0209	0.6434 +0.0208	0.6893 +0.0172	0.9787 +0.0250
0.5394 +0.0204	0.5955 +0.0188	0.6438 +0.0225	0.6897 +0.0148	0.9816 +0.0267
0.5418 +0.0202	0.5960 +0.0216	0.6452 +0.0198	0.6911 +0.0196	0.9849 +0.0245
0.5434 +0.0197	0.5982 +0.0227	0.6456 +0.0181	0.6915 +0.0190	0.9883 +0.0265
0.5438 +0.0181	0.5987 +0.0226	0.6461 +0.0191	0.6919 +0.0180	0.9919 +0.0238
0.5462 +0.0212	0.5999 +0.0211	0.6487 +0.0180	0.6946 +0.0194	0.9951 +0.0224
0.5466 +0.0213	0.6005 +0.0228	0.6491 +0.0157	0.6950 +0.0179	0.9984 +0.0201
0.5480 +0.0187	0.6029 +0.0194	0.6495 +0.0177	0.6954 +0.0181	2450005 +
0.5484 +0.0201	0.6034 +0.0204	0.6508 +0.0186	0.6966 +0.0194	0.0012 +0.0198
0.5506 +0.0209	0.6047 +0.0196	0.6512 +0.0154	2450003 +	0.0044 +0.0173
0.5511 +0.0200	0.6052 +0.0228	0.6549 +0.0222	0.9399 +0.0147	0.0077 +0.0226
0.5523 +0.0183	0.6076 +0.0224	0.6553 +0.0214	0.9435 +0.0174	0.0109 +0.0224
0.5531 +0.0186	0.6080 +0.0216	0.6557 +0.0211	0.9462 +0.0128	0.0139 +0.0272
0.5553 +0.0201	0.6094 +0.0210	0.6570 +0.0209	0.9488 +0.0182	0.0171 +0.0153
0.5562 +0.0200	0.6098 +0.0197	0.6574 +0.0198	0.9514 +0.0209	0.0202 +0.0110
0.5578 +0.0226	0.6123 +0.0217	0.6579 +0.0176	0.9541 +0.0197	0.0234 +0.0242
0.5582 +0.0205	0.6128 +0.0216	0.6604 +0.0198	0.9569 +0.0181	0.0265 +0.0142
0.5604 +0.0222	0.6142 +0.0213	0.6608 +0.0195	0.9595 +0.0139	0.0297 +0.0136

0.4790 +0.0165	0.5814 +0.0195	0.6938 +0.0243	0.5889 +0.0201	2450007 +
0.4815 +0.0196	0.5836 +0.0205	0.6963 +0.0192	0.5913 +0.0211	0.8425 +0.0179
0.4838 +0.0202	0.5860 +0.0225	2450006 +	0.5939 +0.0196	0.8464 +0.0155
0.4862 +0.0198	0.5884 +0.0232	0.4984 +0.0220	0.5963 +0.0205	0.8506 +0.0224
0.4887 +0.0192	0.5909 +0.0244	0.5010 +0.0210	0.5987 +0.0204	0.8541 +0.0210
0.4936 +0.0192	0.5932 +0.0170	0.5032 +0.0234	0.6011 +0.0199	0.8575 +0.0241
0.4960 +0.0207	0.5955 +0.0188	0.5057 +0.0191	0.6034 +0.0183	0.8608 +0.0216
0.4985 +0.0205	0.5979 +0.0192	0.5081 +0.0177	0.6057 +0.0183	0.8647 +0.0197
0.5009 +0.0176	0.6002 +0.0212	0.5105 +0.0207	0.6081 +0.0214	0.8682 +0.0208
0.5033 +0.0202	0.6025 +0.0197	0.5127 +0.0186	0.6105 +0.0220	0.8710 +0.0208
0.5055 +0.0209	0.6051 +0.0193	0.5152 +0.0174	0.6129 +0.0167	0.8801 +0.0204
0.5081 +0.0190	0.6078 +0.0198	0.5176 +0.0187	0.6153 +0.0187	0.8835 +0.0130
0.5106 +0.0206	0.6102 +0.0186	0.5200 +0.0211	0.6180 +0.0204	0.8870 +0.0171
0.5128 +0.0229	0.6125 +0.0194	0.5224 +0.0193	0.6202 +0.0192	0.8905 +0.0178
0.5152 +0.0253	0.6150 +0.0194	0.5248 +0.0208	0.6227 +0.0197	0.8941 +0.0195
0.5175 +0.0223	0.6173 +0.0178	0.5271 +0.0191	0.6251 +0.0183	0.8975 +0.0203
0.5198 +0.0210	0.6196 +0.0203	0.5296 +0.0200	0.6277 +0.0209	0.9012 +0.0288
0.5221 +0.0228	0.6219 +0.0205	0.5319 +0.0233	0.6300 +0.0221	0.9051 +0.0206
0.5245 +0.0227	0.6243 +0.0195	0.5343 +0.0210	0.6326 +0.0214	0.9106 +0.0182
0.5267 +0.0214	0.6266 +0.0175	0.5367 +0.0184	0.6352 +0.0176	0.9144 +0.0228
0.5289 +0.0198	0.6289 +0.0174	0.5390 +0.0218	0.6377 +0.0215	0.9181 +0.0259
0.5311 +0.0218	0.6314 +0.0204	0.5415 +0.0238	0.6401 +0.0209	0.9212 +0.0180
0.5335 +0.0182	0.6337 +0.0201	0.5439 +0.0187	0.6426 +0.0207	0.9246 +0.0209
0.5359 +0.0214	0.6361 +0.0197	0.5461 +0.0179	0.6450 +0.0224	0.9282 +0.0173
0.5383 +0.0192	0.6381 +0.0191	0.5485 +0.0215	0.6473 +0.0221	0.9315 +0.0183
0.5406 +0.0182	0.6403 +0.0216	0.5509 +0.0178	0.6549 +0.0173	0.9355 +0.0176
0.5458 +0.0216	0.6426 +0.0228	0.5532 +0.0164	0.6574 +0.0192	0.9386 +0.0168
0.5481 +0.0213	0.6448 +0.0211	0.5555 +0.0222	0.6600 +0.0201	0.9421 +0.0185
0.5506 +0.0208	0.6470 +0.0202	0.5580 +0.0209	0.6623 +0.0183	0.9461 +0.0206
0.5529 +0.0215	0.6494 +0.0196	0.5604 +0.0207	0.6650 +0.0193	0.9495 +0.0190
0.5553 +0.0201	0.6518 +0.0215	0.5627 +0.0204	0.6675 +0.0212	0.9530 +0.0168
0.5577 +0.0184	0.6542 +0.0211	0.5651 +0.0217	0.6698 +0.0194	0.9563 +0.0124
0.5601 +0.0197	0.6565 +0.0206	0.5676 +0.0206	0.6722 +0.0206	0.9595 +0.0102
0.5626 +0.0203	0.6587 +0.0216	0.5698 +0.0213	0.6825 +0.0184	0.9636 +0.0193
0.5650 +0.0233	0.6610 +0.0212	0.5721 +0.0202	0.6893 +0.0209	0.9667 +0.0151
0.5674 +0.0234	0.6633 +0.0191	0.5746 +0.0178	0.6918 +0.0212	0.9699 +0.0197
0.5697 +0.0200	0.6657 +0.0197	0.5771 +0.0216	0.6944 +0.0214	0.9732 +0.0139
0.5719 +0.0184	0.6681 +0.0205	0.5795 +0.0202	0.6969 +0.0179	0.9763 +0.0182
0.5743 +0.0188	0.6834 +0.0203	0.5819 +0.0191	0.6995 +0.0187	0.9796 +0.0144
0.5768 +0.0203	0.6880 +0.0205	0.5841 +0.0196	0.7020 +0.0199	
0.5790 +0.0218	0.6906 +0.0195	0.5865 +0.0204	0.7043 +0.0191	

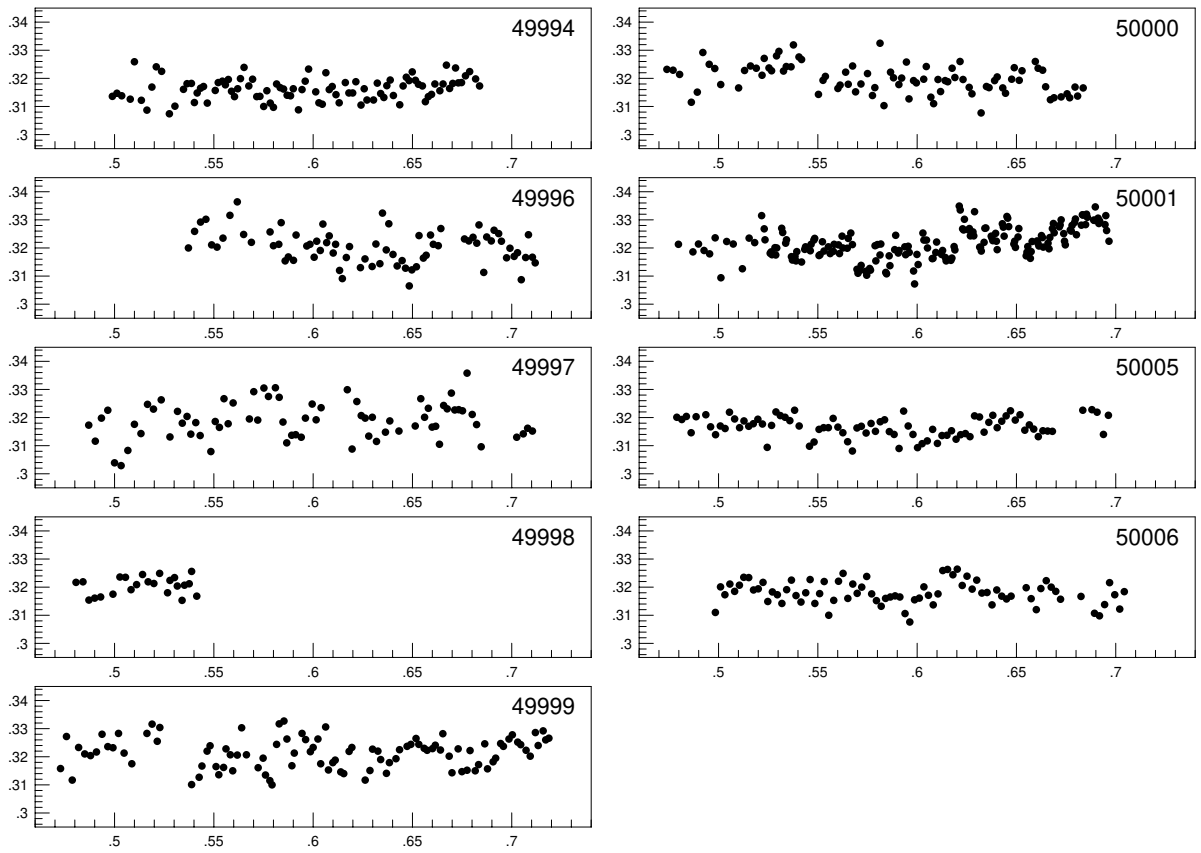


Figure 25: Light curves obtained in Spain in Strömgren c_1 colour.

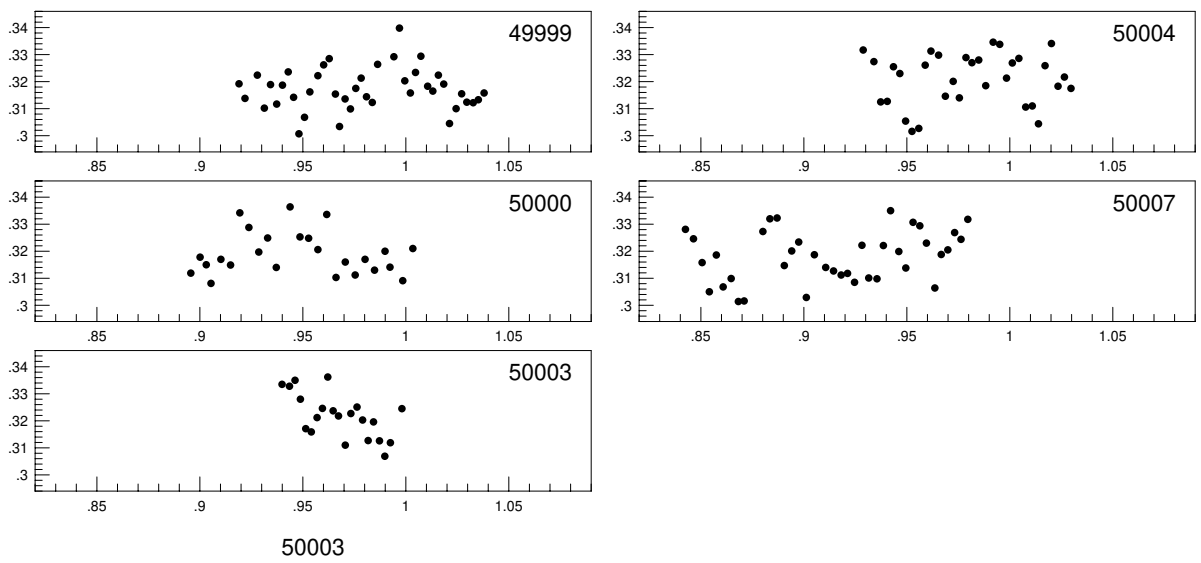


Figure 26: Light curves obtained in Mexico in Strömgren c_1 colour.

Table 27. Strömgren c_1 observations of 57 Tau by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

57 Tau - HR	0.5851 +0.3162	0.6671 +0.3247	0.6238 +0.3130	0.4903 +0.3116
1358	0.5869 +0.3140	0.6687 +0.3164	0.6261 +0.3161	0.4934 +0.3198
c_1 index	0.5886 +0.3138	0.6703 +0.3182	0.6297 +0.3134	0.4966 +0.3226
2449994 +	0.5900 +0.3163	0.6717 +0.3237	0.6316 +0.3214	0.5000 +0.3039
0.4989 +0.3136	0.5926 +0.3088	0.6731 +0.3184	0.6336 +0.3144	0.5033 +0.3029
0.5012 +0.3147	0.5944 +0.3160	0.6747 +0.3185	0.6349 +0.3324	0.5067 +0.3083
0.5036 +0.3138	0.5960 +0.3190	0.6767 +0.3209	0.6368 +0.3193	0.5100 +0.3176
0.5079 +0.3126	0.5977 +0.3233	0.6788 +0.3224	0.6381 +0.3286	0.5133 +0.3143
0.5100 +0.3259	0.6013 +0.3152	0.6818 +0.3198	0.6402 +0.3177	0.5166 +0.3247
0.5135 +0.3122	0.6029 +0.3113	0.6838 +0.3173	0.6423 +0.3136	0.5196 +0.3230
0.5163 +0.3087	0.6046 +0.3108	2449996 +	0.6448 +0.3155	0.5235 +0.3263
0.5188 +0.3169	0.6064 +0.3220	0.5372 +0.3200	0.6465 +0.3128	0.5279 +0.3131
0.5210 +0.3241	0.6081 +0.3160	0.5403 +0.3259	0.6484 +0.3065	0.5317 +0.3222
0.5237 +0.3225	0.6096 +0.3171	0.5433 +0.3292	0.6497 +0.3122	0.5341 +0.3180
0.5276 +0.3074	0.6115 +0.3142	0.5460 +0.3302	0.6520 +0.3133	0.5365 +0.3204
0.5304 +0.3101	0.6131 +0.3113	0.5489 +0.3211	0.6533 +0.3244	0.5384 +0.3141
0.5347 +0.3161	0.6162 +0.3185	0.5516 +0.3203	0.6555 +0.3164	0.5409 +0.3182
0.5365 +0.3181	0.6180 +0.3148	0.5546 +0.3235	0.6569 +0.3174	0.5431 +0.3136
0.5387 +0.3182	0.6199 +0.3148	0.5581 +0.3316	0.6591 +0.3246	0.5485 +0.3079
0.5402 +0.3114	0.6215 +0.3188	0.5618 +0.3364	0.6605 +0.3213	0.5507 +0.3186
0.5416 +0.3148	0.6241 +0.3105	0.5650 +0.3248	0.6630 +0.3208	0.5528 +0.3165
0.5433 +0.3165	0.6257 +0.3163	0.5689 +0.3220	0.6643 +0.3269	0.5551 +0.3267
0.5448 +0.3171	0.6271 +0.3123	0.5783 +0.3257	0.6762 +0.3232	0.5572 +0.3178
0.5467 +0.3112	0.6304 +0.3123	0.5800 +0.3208	0.6784 +0.3225	0.5597 +0.3252
0.5507 +0.3157	0.6323 +0.3183	0.5827 +0.3213	0.6805 +0.3238	0.5679 +0.3195
0.5522 +0.3185	0.6340 +0.3146	0.5839 +0.3290	0.6824 +0.3217	0.5701 +0.3292
0.5543 +0.3190	0.6356 +0.3132	0.5859 +0.3154	0.6835 +0.3282	0.5721 +0.3191
0.5558 +0.3177	0.6371 +0.3174	0.5875 +0.3168	0.6859 +0.3113	0.5752 +0.3305
0.5573 +0.3196	0.6388 +0.3194	0.5901 +0.3156	0.6874 +0.3239	0.5775 +0.3275
0.5589 +0.3154	0.6404 +0.3139	0.5914 +0.3246	0.6897 +0.3225	0.5810 +0.3306
0.5604 +0.3135	0.6436 +0.3106	0.5968 +0.3207	0.6911 +0.3263	0.5829 +0.3272
0.5620 +0.3163	0.6453 +0.3173	0.5984 +0.3213	0.6934 +0.3251	0.5848 +0.3184
0.5634 +0.3199	0.6469 +0.3204	0.6005 +0.3167	0.6948 +0.3224	0.5867 +0.3110
0.5652 +0.3239	0.6483 +0.3192	0.6018 +0.3224	0.6974 +0.3165	0.5892 +0.3137
0.5676 +0.3173	0.6499 +0.3223	0.6036 +0.3191	0.6991 +0.3199	0.5912 +0.3139
0.5695 +0.3197	0.6515 +0.3193	0.6049 +0.3285	0.7012 +0.3170	0.5940 +0.3130
0.5716 +0.3135	0.6530 +0.3179	0.6068 +0.3219	0.7029 +0.3183	0.5961 +0.3198
0.5732 +0.3136	0.6550 +0.3173	0.6081 +0.3243	0.7048 +0.3087	0.5995 +0.3248
0.5751 +0.3100	0.6565 +0.3117	0.6101 +0.3182	0.7070 +0.3166	0.6015 +0.3192
0.5767 +0.3156	0.6580 +0.3135	0.6113 +0.3213	0.7084 +0.3247	0.6040 +0.3235
0.5784 +0.3112	0.6596 +0.3143	0.6133 +0.3120	0.7104 +0.3167	0.6172 +0.3299
0.5800 +0.3097	0.6613 +0.3180	0.6147 +0.3091	0.7118 +0.3147	0.6196 +0.3088
0.5816 +0.3180	0.6638 +0.3156	0.6167 +0.3166	2449997 +	0.6220 +0.3257
0.5834 +0.3167	0.6654 +0.3180	0.6183 +0.3205	0.4870 +0.3173	0.6242 +0.3207

0.6262 +0.3198	0.5340 +0.3153	0.5905 +0.3213	0.6958 +0.3237	0.0212 +0.3045
0.6280 +0.3134	0.5352 +0.3207	0.5944 +0.3283	0.6986 +0.3263	0.0244 +0.3100
0.6298 +0.3201	0.5376 +0.3212	0.5962 +0.3261	0.7003 +0.3278	0.0271 +0.3155
0.6319 +0.3115	0.5388 +0.3256	0.5986 +0.3218	0.7030 +0.3252	0.0296 +0.3124
0.6364 +0.3148	0.5414 +0.3168	0.6000 +0.3233	0.7045 +0.3243	0.0327 +0.3122
0.6386 +0.3188	2449999 +	0.6024 +0.3263	0.7072 +0.3223	0.0352 +0.3133
0.6432 +0.3152	0.4728 +0.3158	0.6038 +0.3175	0.7093 +0.3202	0.0380 +0.3158
0.6514 +0.3170	0.4758 +0.3272	0.6063 +0.3306	0.7119 +0.3286	0.4740 +0.3232
0.6542 +0.3267	0.4787 +0.3117	0.6077 +0.3153	0.7133 +0.3240	0.4771 +0.3229
0.6561 +0.3201	0.4819 +0.3233	0.6099 +0.3179	0.7158 +0.3292	0.4804 +0.3214
0.6580 +0.3233	0.4850 +0.3210	0.6111 +0.3188	0.7171 +0.3260	0.4863 +0.3115
0.6599 +0.3166	0.4879 +0.3204	0.6139 +0.3146	0.7187 +0.3266	0.4893 +0.3151
0.6617 +0.3169	0.4909 +0.3217	0.6154 +0.3140	0.9190 +0.3192	0.4921 +0.3292
0.6636 +0.3105	0.4937 +0.3280	0.6181 +0.3219	0.9219 +0.3138	0.4953 +0.3250
0.6657 +0.3243	0.4966 +0.3236	0.6195 +0.3233	0.9279 +0.3224	0.4981 +0.3235
0.6675 +0.3231	0.4992 +0.3232	0.6262 +0.3117	0.9313 +0.3102	0.5011 +0.3178
0.6696 +0.3287	0.5020 +0.3283	0.6286 +0.3151	0.9343 +0.3189	0.5101 +0.3166
0.6713 +0.3227	0.5048 +0.3213	0.6299 +0.3227	0.9373 +0.3117	0.5131 +0.3228
0.6733 +0.3228	0.5087 +0.3175	0.6326 +0.3220	0.9401 +0.3187	0.5161 +0.3244
0.6752 +0.3224	0.5163 +0.3283	0.6340 +0.3190	0.9429 +0.3236	0.5190 +0.3236
0.6775 +0.3358	0.5189 +0.3316	0.6369 +0.3141	0.9455 +0.3142	0.5219 +0.3211
0.6801 +0.3211	0.5215 +0.3255	0.6384 +0.3179	0.9481 +0.3007	0.5230 +0.3271
0.6823 +0.3175	0.5228 +0.3304	0.6417 +0.3193	0.9508 +0.3068	0.5254 +0.3237
0.6846 +0.3096	0.5388 +0.3101	0.6435 +0.3225	0.9534 +0.3162	0.5267 +0.3227
0.7025 +0.3130	0.5426 +0.3127	0.6473 +0.3237	0.9573 +0.3222	0.5292 +0.3280
0.7058 +0.3142	0.5440 +0.3167	0.6492 +0.3244	0.9601 +0.3262	0.5304 +0.3296
0.7080 +0.3162	0.5466 +0.3220	0.6518 +0.3265	0.9628 +0.3285	0.5327 +0.3226
0.7104 +0.3152	0.5481 +0.3239	0.6532 +0.3244	0.9658 +0.3154	0.5341 +0.3242
2449998 +	0.5511 +0.3165	0.6559 +0.3230	0.9678 +0.3034	0.5365 +0.3241
0.4806 +0.3217	0.5525 +0.3136	0.6574 +0.3223	0.9705 +0.3136	0.5377 +0.3319
0.4841 +0.3219	0.5549 +0.3162	0.6601 +0.3229	0.9731 +0.3099	0.5405 +0.3276
0.4871 +0.3154	0.5561 +0.3228	0.6615 +0.3241	0.9757 +0.3175	0.5418 +0.3267
0.4900 +0.3161	0.5583 +0.3207	0.6641 +0.3224	0.9783 +0.3213	0.5503 +0.3143
0.4930 +0.3165	0.5595 +0.3150	0.6653 +0.3282	0.9809 +0.3144	0.5526 +0.3193
0.4992 +0.3175	0.5618 +0.3206	0.6685 +0.3202	0.9837 +0.3123	0.5538 +0.3207
0.5027 +0.3236	0.5640 +0.3303	0.6699 +0.3143	0.9863 +0.3264	0.5601 +0.3164
0.5055 +0.3235	0.5664 +0.3207	0.6730 +0.3228	0.9942 +0.3292	0.5612 +0.3176
0.5083 +0.3191	0.5723 +0.3161	0.6749 +0.3147	0.9969 +0.3398	0.5640 +0.3222
0.5111 +0.3209	0.5748 +0.3195	0.6775 +0.3152	0.9995 +0.3203	0.5653 +0.3179
0.5141 +0.3245	0.5760 +0.3135	0.6790 +0.3222	2450000 +	0.5675 +0.3244
0.5169 +0.3219	0.5782 +0.3115	0.6816 +0.3150	0.0022 +0.3158	0.5690 +0.3152
0.5198 +0.3213	0.5793 +0.3100	0.6833 +0.3172	0.0047 +0.3234	0.5717 +0.3180
0.5227 +0.3249	0.5816 +0.3244	0.6864 +0.3246	0.0073 +0.3294	0.5750 +0.3217
0.5267 +0.3180	0.5829 +0.3317	0.6878 +0.3157	0.0106 +0.3183	0.5775 +0.3139
0.5279 +0.3224	0.5853 +0.3327	0.6906 +0.3182	0.0131 +0.3165	0.5787 +0.3167
0.5302 +0.3234	0.5868 +0.3263	0.6919 +0.3195	0.0158 +0.3224	0.5813 +0.3325
0.5316 +0.3204	0.5893 +0.3168	0.6944 +0.3247	0.0184 +0.3191	0.5833 +0.3103

0.5866 +0.3222	0.9031 +0.3150	0.5338 +0.3217	0.5887 +0.3194	0.6381 +0.3226
0.5881 +0.3202	0.9054 +0.3081	0.5342 +0.3229	0.5892 +0.3245	0.6395 +0.3252
0.5908 +0.3178	0.9102 +0.3170	0.5367 +0.3169	0.5905 +0.3182	0.6399 +0.3224
0.5922 +0.3201	0.9149 +0.3149	0.5372 +0.3157	0.5909 +0.3191	0.6403 +0.3194
0.5946 +0.3258	0.9194 +0.3342	0.5385 +0.3170	0.5938 +0.3204	0.6429 +0.3286
0.5959 +0.3127	0.9238 +0.3288	0.5390 +0.3154	0.5942 +0.3176	0.6434 +0.3274
0.5982 +0.3192	0.9286 +0.3197	0.5394 +0.3187	0.5955 +0.3206	0.6438 +0.3242
0.5996 +0.3184	0.9329 +0.3249	0.5418 +0.3150	0.5960 +0.3184	0.6452 +0.3312
0.6033 +0.3197	0.9371 +0.3140	0.5434 +0.3195	0.5982 +0.3118	0.6456 +0.3306
0.6046 +0.3242	0.9438 +0.3364	0.5438 +0.3204	0.5987 +0.3072	0.6461 +0.3276
0.6069 +0.3133	0.9486 +0.3253	0.5462 +0.3190	0.5999 +0.3177	0.6487 +0.3214
0.6083 +0.3110	0.9528 +0.3248	0.5466 +0.3213	0.6005 +0.3141	0.6491 +0.3224
0.6105 +0.3196	0.9573 +0.3206	0.5480 +0.3228	0.6029 +0.3253	0.6495 +0.3202
0.6118 +0.3153	0.9616 +0.3336	0.5484 +0.3234	0.6034 +0.3228	0.6508 +0.3239
0.6141 +0.3192	0.9661 +0.3103	0.5506 +0.3173	0.6047 +0.3228	0.6512 +0.3269
0.6154 +0.3188	0.9706 +0.3160	0.5511 +0.3176	0.6052 +0.3200	0.6549 +0.3172
0.6176 +0.3236	0.9754 +0.3112	0.5523 +0.3222	0.6076 +0.3162	0.6553 +0.3185
0.6190 +0.3203	0.9802 +0.3170	0.5531 +0.3189	0.6080 +0.3163	0.6557 +0.3205
0.6216 +0.3260	0.9848 +0.3130	0.5553 +0.3204	0.6094 +0.3184	0.6570 +0.3163
0.6231 +0.3196	0.9899 +0.3200	0.5562 +0.3180	0.6098 +0.3221	0.6574 +0.3187
0.6262 +0.3168	0.9923 +0.3141	0.5578 +0.3188	0.6123 +0.3177	0.6579 +0.3223
0.6276 +0.3145	0.9985 +0.3091	0.5582 +0.3213	0.6128 +0.3191	0.6604 +0.3225
0.6322 +0.3077	2450001 +	0.5604 +0.3211	0.6142 +0.3166	0.6608 +0.3217
0.6349 +0.3171	0.0034 +0.3210	0.5609 +0.3180	0.6146 +0.3154	0.6613 +0.3207
0.6362 +0.3167	0.4798 +0.3213	0.5622 +0.3242	0.6170 +0.3156	0.6626 +0.3244
0.6390 +0.3192	0.4871 +0.3186	0.5626 +0.3200	0.6175 +0.3164	0.6631 +0.3237
0.6403 +0.3205	0.4899 +0.3214	0.5648 +0.3199	0.6186 +0.3205	0.6635 +0.3203
0.6431 +0.3166	0.4927 +0.3191	0.5653 +0.3234	0.6190 +0.3193	0.6659 +0.3217
0.6445 +0.3147	0.4955 +0.3179	0.5666 +0.3253	0.6212 +0.3349	0.6664 +0.3197
0.6476 +0.3197	0.4983 +0.3236	0.5674 +0.3212	0.6217 +0.3335	0.6668 +0.3237
0.6489 +0.3238	0.5012 +0.3094	0.5697 +0.3124	0.6229 +0.3268	0.6681 +0.3269
0.6514 +0.3193	0.5041 +0.3223	0.5702 +0.3110	0.6234 +0.3264	0.6686 +0.3287
0.6528 +0.3227	0.5074 +0.3214	0.5714 +0.3121	0.6238 +0.3302	0.6690 +0.3254
0.6595 +0.3260	0.5120 +0.3126	0.5718 +0.3138	0.6259 +0.3264	0.6716 +0.3275
0.6609 +0.3236	0.5154 +0.3235	0.5742 +0.3117	0.6263 +0.3269	0.6720 +0.3282
0.6632 +0.3229	0.5182 +0.3219	0.5746 +0.3103	0.6268 +0.3243	0.6725 +0.3300
0.6647 +0.3170	0.5217 +0.3315	0.5761 +0.3127	0.6281 +0.3257	0.6738 +0.3251
0.6671 +0.3124	0.5230 +0.3268	0.5765 +0.3121	0.6285 +0.3243	0.6742 +0.3224
0.6689 +0.3131	0.5234 +0.3229	0.5788 +0.3208	0.6289 +0.3329	0.6746 +0.3211
0.6725 +0.3134	0.5260 +0.3181	0.5792 +0.3154	0.6315 +0.3203	0.6771 +0.3264
0.6755 +0.3145	0.5265 +0.3186	0.5800 +0.3212	0.6319 +0.3202	0.6776 +0.3260
0.6768 +0.3131	0.5269 +0.3176	0.5813 +0.3175	0.6323 +0.3189	0.6780 +0.3280
0.6795 +0.3169	0.5284 +0.3201	0.5817 +0.3214	0.6337 +0.3220	0.6793 +0.3291
0.6808 +0.3137	0.5288 +0.3175	0.5842 +0.3113	0.6341 +0.3270	0.6797 +0.3303
0.6836 +0.3166	0.5293 +0.3200	0.5846 +0.3108	0.6346 +0.3271	0.6802 +0.3247
0.8956 +0.3119	0.5318 +0.3270	0.5859 +0.3172	0.6373 +0.3242	0.6827 +0.3281
0.9001 +0.3178	0.5323 +0.3255	0.5863 +0.3137	0.6377 +0.3235	0.6832 +0.3318

0.6836 +0.3317	0.9617 +0.3313	0.5383 +0.3226	0.6518 +0.3210	0.5771 +0.3176
0.6848 +0.3283	0.9654 +0.3298	0.5406 +0.3170	0.6542 +0.3155	0.5795 +0.3152
0.6853 +0.3320	0.9687 +0.3146	0.5458 +0.3098	0.6565 +0.3174	0.5819 +0.3132
0.6857 +0.3309	0.9725 +0.3201	0.5481 +0.3113	0.6587 +0.3159	0.5841 +0.3160
0.6889 +0.3299	0.9755 +0.3140	0.5506 +0.3158	0.6610 +0.3132	0.5865 +0.3165
0.6893 +0.3298	0.9787 +0.3289	0.5529 +0.3164	0.6633 +0.3153	0.5889 +0.3169
0.6897 +0.3346	0.9816 +0.3270	0.5553 +0.3164	0.6657 +0.3152	0.5913 +0.3165
0.6911 +0.3306	0.9849 +0.3280	0.5577 +0.3197	0.6681 +0.3151	0.5939 +0.3106
0.6915 +0.3287	0.9883 +0.3185	0.5601 +0.3166	0.6834 +0.3226	0.5963 +0.3076
0.6919 +0.3296	0.9919 +0.3346	0.5626 +0.3146	0.6880 +0.3228	0.5987 +0.3155
0.6946 +0.3283	0.9951 +0.3338	0.5650 +0.3114	0.6906 +0.3219	0.6011 +0.3161
0.6950 +0.3315	0.9984 +0.3213	0.5674 +0.3081	0.6938 +0.3140	0.6034 +0.3201
0.6954 +0.3262	2450005 +	0.5697 +0.3163	0.6963 +0.3208	0.6057 +0.3171
0.6966 +0.3224	0.0012 +0.3269	0.5719 +0.3169	2450006 +	0.6081 +0.3137
2450003 +	0.0044 +0.3286	0.5743 +0.3145	0.4984 +0.3110	0.6105 +0.3176
0.9399 +0.3335	0.0077 +0.3106	0.5768 +0.3179	0.5010 +0.3201	0.6129 +0.3259
0.9435 +0.3328	0.0109 +0.3110	0.5790 +0.3151	0.5032 +0.3173	0.6153 +0.3263
0.9462 +0.3350	0.0139 +0.3044	0.5814 +0.3185	0.5057 +0.3211	0.618 +0.3244
0.9488 +0.3280	0.0171 +0.3259	0.5836 +0.3192	0.5081 +0.3185	0.6202 +0.3264
0.9514 +0.3171	0.0202 +0.3341	0.5860 +0.3150	0.5105 +0.3207	0.6227 +0.3206
0.9541 +0.3159	0.0234 +0.3183	0.5884 +0.3140	0.5127 +0.3235	0.6251 +0.3239
0.9569 +0.3212	0.0265 +0.3217	0.5909 +0.3090	0.5152 +0.3234	0.6277 +0.3193
0.9595 +0.3246	0.0297 +0.3175	0.5932 +0.3223	0.5176 +0.3190	0.6300 +0.3225
0.9621 +0.3362	0.4790 +0.3201	0.5955 +0.3170	0.5200 +0.3194	0.6326 +0.3179
0.9647 +0.3237	0.4815 +0.3193	0.5979 +0.3140	0.5224 +0.3217	0.6352 +0.3181
0.9673 +0.3218	0.4838 +0.3204	0.6002 +0.3093	0.5248 +0.3149	0.6377 +0.3137
0.9706 +0.3110	0.4862 +0.3146	0.6025 +0.3107	0.5271 +0.3183	0.6401 +0.3190
0.9733 +0.3227	0.4887 +0.3203	0.6051 +0.3117	0.5296 +0.3173	0.6426 +0.3168
0.9763 +0.3251	0.4936 +0.3210	0.6078 +0.3158	0.5319 +0.3142	0.6450 +0.3158
0.9790 +0.3203	0.4960 +0.3167	0.6102 +0.3108	0.5343 +0.3191	0.6473 +0.3168
0.9817 +0.3127	0.4985 +0.3139	0.6125 +0.3136	0.5367 +0.3225	0.6549 +0.3198
0.9843 +0.3196	0.5009 +0.3170	0.6150 +0.3137	0.5390 +0.3170	0.6574 +0.3159
0.9872 +0.3126	0.5033 +0.3161	0.6173 +0.3153	0.5415 +0.3147	0.6600 +0.3120
0.9898 +0.3069	0.5055 +0.3219	0.6196 +0.3123	0.5439 +0.3180	0.6623 +0.3195
0.9925 +0.3119	0.5081 +0.3195	0.6219 +0.3139	0.5461 +0.3227	0.6650 +0.3223
0.9981 +0.3245	0.5106 +0.3164	0.6243 +0.3143	0.5485 +0.3142	0.6675 +0.3200
2450004 +	0.5128 +0.3188	0.6266 +0.3132	0.5509 +0.3177	0.6698 +0.3185
0.9288 +0.3317	0.5152 +0.3169	0.6289 +0.3206	0.5532 +0.3220	0.6722 +0.3157
0.9340 +0.3274	0.5175 +0.3178	0.6314 +0.3202	0.5555 +0.3100	0.6825 +0.3167
0.9373 +0.3125	0.5198 +0.3194	0.6337 +0.3148	0.5580 +0.3153	0.6893 +0.3107
0.9405 +0.3127	0.5221 +0.3177	0.6361 +0.3183	0.5604 +0.3221	0.6918 +0.3098
0.9435 +0.3255	0.5245 +0.3094	0.6381 +0.3208	0.5627 +0.3249	0.6944 +0.3138
0.9466 +0.3230	0.5267 +0.3172	0.6403 +0.3164	0.5651 +0.3160	0.6969 +0.3216
0.9494 +0.3054	0.5289 +0.3220	0.6426 +0.3187	0.5676 +0.3211	0.6995 +0.3173
0.9525 +0.3016	0.5311 +0.3207	0.6448 +0.3206	0.5698 +0.3178	0.7020 +0.3122
0.9558 +0.3027	0.5335 +0.3201	0.6470 +0.3224	0.5721 +0.3200	0.7043 +0.3184
0.9589 +0.3261	0.5359 +0.3189	0.6494 +0.3191	0.5746 +0.3238	2450007 +

0.8425 +0.3281	0.8710 +0.3016	0.9051 +0.3187	0.9355 +0.3098	0.9636 +0.3064
0.8464 +0.3246	0.8801 +0.3273	0.9106 +0.3140	0.9386 +0.3221	0.9667 +0.3188
0.8506 +0.3158	0.8835 +0.3320	0.9144 +0.3127	0.9421 +0.3350	0.9699 +0.3205
0.8541 +0.3050	0.8870 +0.3323	0.9181 +0.3112	0.9461 +0.3199	0.9732 +0.3269
0.8575 +0.3186	0.8905 +0.3147	0.9212 +0.3118	0.9495 +0.3138	0.9763 +0.3244
0.8608 +0.3068	0.8941 +0.3201	0.9246 +0.3085	0.953 +0.3307	0.9796 +0.3318
0.8647 +0.3099	0.8975 +0.3234	0.9282 +0.3222	0.9563 +0.3294	
0.8682 +0.3014	0.9012 +0.3029	0.9315 +0.3101	0.9595 +0.3230	

The Spanish and Mexican runs used HR 1430 as a check star for checking the stability of the generally used comparison star (HR 1358). Here we present the differential measurement for HR 1430 – HR 1358 obtained in Strömgren b , y , u , v , $b-y$, m_1 and c_1 values (Tables 28-34). The light curves are shown in Figures 27-33. The Spanish and Mexican light curves are displayed in the same figure. The Spanish are on the left side panels, while the Mexican ones can be found in the right side panels. The check proved that the comparison and the check stars are constant.

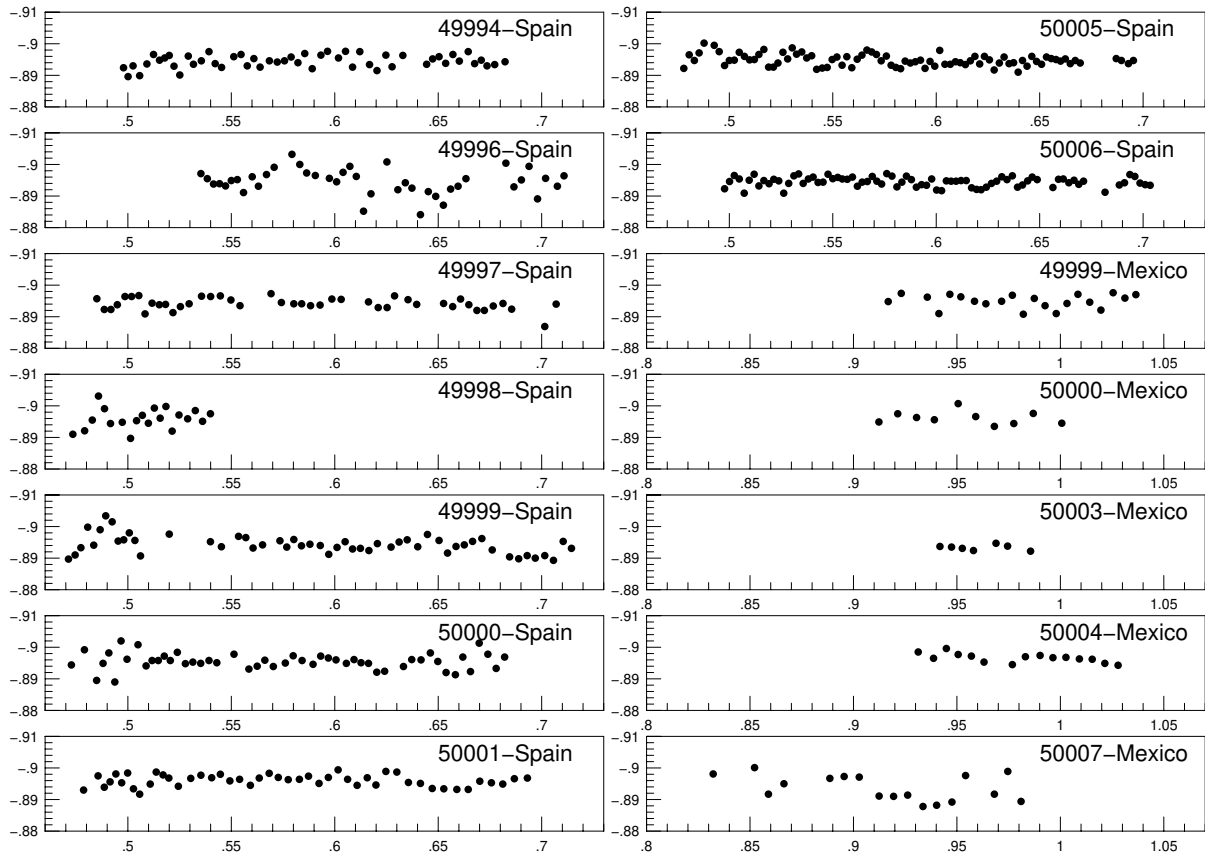


Figure 27: Strömgren b observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995).

Table 28. Strömgren b observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

HR 1430 - HR	0.6444 -0.8935	0.6560 -0.8922	0.6396 -0.8939	0.5007 -0.8980
1358	0.6473 -0.8952	0.6596 -0.8931	0.6526 -0.8942	0.5034 -0.8956
b colour	0.6504 -0.8959	0.6634 -0.8955	0.6570 -0.8932	0.5061 -0.8907
2449994 +	0.6536 -0.8938	0.6827 -0.9004	0.6608 -0.8956	0.5200 -0.8976
0.4979 -0.8924	0.6571 -0.8966	0.6866 -0.8929	0.6648 -0.8938	0.5399 -0.8952
0.5001 -0.8896	0.6602 -0.8945	0.6902 -0.8951	0.6687 -0.8920	0.5452 -0.8936
0.5025 -0.8930	0.6645 -0.8975	0.6939 -0.8994	0.6723 -0.8920	0.5535 -0.8969
0.5057 -0.8899	0.6676 -0.8937	0.6980 -0.8891	0.6766 -0.8934	0.5570 -0.8965
0.5092 -0.8936	0.6708 -0.8948	0.7019 -0.8956	0.6813 -0.8942	0.5605 -0.8932
0.5124 -0.8966	0.6736 -0.8930	0.7076 -0.8931	0.6855 -0.8924	0.5651 -0.8942
0.5153 -0.8948	0.6773 -0.8934	0.7108 -0.8964	0.7015 -0.8869	0.5735 -0.8955
0.5178 -0.8955	0.6823 -0.8943	2449997 +	0.7070 -0.8940	0.5768 -0.8935
0.5200 -0.8963	2449996 +	0.4850 -0.8957	2449998 +	0.5802 -0.8959
0.5223 -0.8929	0.5353 -0.8971	0.4886 -0.8923	0.4734 -0.8910	0.5839 -0.8939
0.5251 -0.8901	0.5384 -0.8955	0.4918 -0.8923	0.4791 -0.8921	0.5880 -0.8944
0.5292 -0.8961	0.5414 -0.8938	0.4949 -0.8938	0.4828 -0.8955	0.5930 -0.8940
0.5317 -0.8935	0.5443 -0.8939	0.4986 -0.8964	0.4858 -0.9031	0.5971 -0.8912
0.5355 -0.8946	0.5472 -0.8932	0.5018 -0.8964	0.4887 -0.8991	0.6011 -0.8934
0.5392 -0.8975	0.5500 -0.8949	0.5053 -0.8967	0.4916 -0.8944	0.6050 -0.8952
0.5422 -0.8937	0.5529 -0.8952	0.5083 -0.8909	0.4973 -0.8948	0.6086 -0.8929
0.5453 -0.8925	0.5559 -0.8911	0.5117 -0.8943	0.5013 -0.8897	0.6124 -0.8931
0.5512 -0.8959	0.5601 -0.8961	0.5152 -0.8938	0.5042 -0.8953	0.6165 -0.8924
0.5547 -0.8966	0.5631 -0.8931	0.5182 -0.8939	0.5070 -0.8970	0.6206 -0.8946
0.5577 -0.8930	0.5670 -0.8968	0.5218 -0.8913	0.5099 -0.8945	0.6272 -0.8935
0.5609 -0.8953	0.5707 -0.8991	0.5254 -0.8932	0.5128 -0.8993	0.6311 -0.8951
0.5639 -0.8926	0.5793 -0.9032	0.5296 -0.8941	0.5156 -0.8961	0.6350 -0.8958
0.5684 -0.8946	0.5831 -0.9000	0.5356 -0.8965	0.5184 -0.8998	0.6401 -0.8936
0.5722 -0.8942	0.5864 -0.8973	0.5400 -0.8964	0.5214 -0.8920	0.6448 -0.8975
0.5757 -0.8946	0.5906 -0.8965	0.5447 -0.8966	0.5247 -0.8971	0.6504 -0.8956
0.5789 -0.8958	0.5974 -0.8956	0.5498 -0.8953	0.5289 -0.8959	0.6545 -0.8916
0.5822 -0.8940	0.6009 -0.8945	0.5542 -0.8935	0.5326 -0.8985	0.6586 -0.8937
0.5855 -0.8969	0.6040 -0.8975	0.5692 -0.8973	0.5361 -0.8951	0.6626 -0.8942
0.5891 -0.8921	0.6073 -0.8994	0.5742 -0.8945	0.5399 -0.8975	0.6666 -0.8953
0.5933 -0.8964	0.6104 -0.8962	0.5802 -0.8941	2449999 +	0.6711 -0.8962
0.5965 -0.8976	0.6139 -0.8852	0.5840 -0.8941	0.4713 -0.8897	0.6761 -0.8926
0.6018 -0.8955	0.6175 -0.8907	0.5883 -0.8935	0.4745 -0.8910	0.6845 -0.8904
0.6052 -0.8976	0.6252 -0.9008	0.5929 -0.8937	0.4773 -0.8933	0.6889 -0.8898
0.6086 -0.8926	0.6305 -0.8920	0.5986 -0.8956	0.4806 -0.8998	0.6930 -0.8908
0.6121 -0.8975	0.6341 -0.8942	0.6031 -0.8955	0.4835 -0.8941	0.6969 -0.8900
0.6168 -0.8934	0.6373 -0.8925	0.6163 -0.8947	0.4866 -0.8990	0.7015 -0.8908
0.6204 -0.8915	0.6414 -0.8841	0.6210 -0.8929	0.4893 -0.9034	0.7057 -0.8893
0.6247 -0.8964	0.6452 -0.8914	0.6253 -0.8929	0.4924 -0.9015	0.7104 -0.8953
0.6277 -0.8927	0.6488 -0.8899	0.6289 -0.8966	0.4953 -0.8954	0.7144 -0.8931
0.6329 -0.8963	0.6525 -0.8871	0.6354 -0.8954	0.4980 -0.8958	0.9168 -0.8948

0.9231 -0.8974	0.5799 -0.8973	0.5170 -0.8978	0.9449 -0.8996	0.5592 -0.8924
0.9357 -0.8962	0.5842 -0.8958	0.5198 -0.8968	0.9506 -0.8977	0.5618 -0.8951
0.9413 -0.8910	0.5895 -0.8946	0.5244 -0.8942	0.9570 -0.8972	0.5641 -0.8964
0.9466 -0.8971	0.5932 -0.8972	0.5304 -0.8967	0.9631 -0.8953	0.5665 -0.8980
0.9519 -0.8963	0.5969 -0.8966	0.5353 -0.8977	0.9768 -0.8945	0.5688 -0.8974
0.9585 -0.8949	0.6006 -0.8960	0.5405 -0.8969	0.9831 -0.8970	0.5711 -0.8966
0.9640 -0.8941	0.6056 -0.8949	0.5447 -0.8980	0.9902 -0.8974	0.5734 -0.8946
0.9716 -0.8949	0.6093 -0.8961	0.5493 -0.8959	0.9964 -0.8967	0.5759 -0.8961
0.9768 -0.8968	0.6127 -0.8951	0.5540 -0.8964	2450005 +	0.5782 -0.8932
0.9821 -0.8908	0.6163 -0.8949	0.5592 -0.8945	0.0027 -0.8968	0.5805 -0.8925
0.9874 -0.8958	0.6203 -0.8921	0.5635 -0.8968	0.0092 -0.8963	0.5828 -0.8921
0.9926 -0.8935	0.6241 -0.8924	0.5683 -0.8983	0.0154 -0.8962	0.5850 -0.8945
0.9980 -0.8910	0.6332 -0.8939	0.5727 -0.8970	0.0215 -0.8949	0.5875 -0.8939
2450000 +	0.6372 -0.8961	0.5775 -0.8963	0.0279 -0.8943	0.5899 -0.8943
0.0032 -0.8942	0.6417 -0.8960	0.5829 -0.8964	0.4780 -0.8922	0.5924 -0.8948
0.0085 -0.8971	0.6462 -0.8982	0.5873 -0.8974	0.4806 -0.8965	0.5946 -0.8922
0.0142 -0.8946	0.6498 -0.8955	0.5924 -0.8951	0.4831 -0.8947	0.5970 -0.8944
0.0196 -0.8921	0.6538 -0.8920	0.5969 -0.8970	0.4854 -0.8971	0.5993 -0.8929
0.0255 -0.8976	0.6583 -0.8913	0.6016 -0.8994	0.4878 -0.9002	0.6017 -0.8979
0.0312 -0.8959	0.6619 -0.8969	0.6062 -0.8964	0.4927 -0.8995	0.6042 -0.8935
0.0365 -0.8970	0.6656 -0.8923	0.6108 -0.8945	0.4951 -0.8975	0.6068 -0.8935
0.4727 -0.8944	0.6698 -0.9013	0.6157 -0.8969	0.4977 -0.8931	0.6093 -0.8943
0.4790 -0.8992	0.6740 -0.8978	0.6199 -0.8946	0.5000 -0.8947	0.6116 -0.8940
0.4849 -0.8895	0.6780 -0.8933	0.6247 -0.8989	0.5024 -0.8948	0.6141 -0.8934
0.4880 -0.8949	0.6821 -0.8969	0.6300 -0.8987	0.5048 -0.8973	0.6165 -0.8946
0.4908 -0.8982	0.9123 -0.8949	0.6356 -0.8954	0.5073 -0.8960	0.6187 -0.8960
0.4937 -0.8890	0.9214 -0.8975	0.6414 -0.8951	0.5098 -0.8949	0.6210 -0.8936
0.4967 -0.9020	0.9305 -0.8963	0.6471 -0.8935	0.5121 -0.8950	0.6233 -0.8960
0.4996 -0.8962	0.9391 -0.8956	0.6527 -0.8934	0.5143 -0.8966	0.6257 -0.8949
0.5049 -0.9008	0.9506 -0.9007	0.6590 -0.8932	0.5167 -0.8982	0.6280 -0.8917
0.5088 -0.8941	0.9591 -0.8966	0.6645 -0.8932	0.5190 -0.8926	0.6305 -0.8939
0.5117 -0.8958	0.9681 -0.8935	0.6701 -0.8958	0.5213 -0.8926	0.6328 -0.8958
0.5147 -0.8958	0.9775 -0.8944	0.6757 -0.8953	0.5235 -0.8939	0.6352 -0.8937
0.5176 -0.8972	0.9869 -0.8976	0.6812 -0.8949	0.5259 -0.8973	0.6374 -0.8940
0.5205 -0.8958	2450001 +	0.6868 -0.8966	0.5282 -0.8952	0.6396 -0.8910
0.5239 -0.8984	0.0007 -0.8945	0.6931 -0.8968	0.5304 -0.8987	0.6417 -0.8947
0.5278 -0.8948	0.4786 -0.8930	2450003 +	0.5325 -0.8967	0.6439 -0.8929
0.5314 -0.8953	0.4856 -0.8975	0.9418 -0.8937	0.5350 -0.8974	0.6462 -0.8960
0.5352 -0.8949	0.4886 -0.8939	0.9474 -0.8935	0.5374 -0.8955	0.6485 -0.8944
0.5392 -0.8958	0.4914 -0.8956	0.9526 -0.8931	0.5398 -0.8962	0.6509 -0.8935
0.5430 -0.8951	0.4942 -0.8981	0.9580 -0.8924	0.5422 -0.8919	0.6533 -0.8958
0.5513 -0.8978	0.4970 -0.8953	0.9689 -0.8947	0.5449 -0.8923	0.6556 -0.8953
0.5585 -0.8931	0.4999 -0.8984	0.9745 -0.8938	0.5473 -0.8925	0.6579 -0.8950
0.5625 -0.8940	0.5027 -0.8934	0.9856 -0.8922	0.5497 -0.8950	0.6601 -0.8945
0.5662 -0.8959	0.5057 -0.8917	2450004 +	0.5520 -0.8958	0.6624 -0.8952
0.5703 -0.8939	0.5108 -0.8949	0.9313 -0.8985	0.5545 -0.8932	0.6648 -0.8937
0.5761 -0.8950	0.5137 -0.8987	0.9387 -0.8965	0.5568 -0.8959	0.6672 -0.8947

0.6696 -0.8939	0.5335 -0.8970	0.5834 -0.8944	0.6342 -0.8952	0.7034 -0.8934
0.6870 -0.8953	0.5357 -0.8940	0.5856 -0.8963	0.6368 -0.8964	2450007 +
0.6895 -0.8947	0.5382 -0.8954	0.5880 -0.8952	0.6393 -0.8928	0.8322 -0.8981
0.6929 -0.8937	0.5405 -0.8960	0.5904 -0.8928	0.6417 -0.8935	0.8522 -0.9001
0.6953 -0.8947	0.5429 -0.8943	0.5929 -0.8936	0.6442 -0.8948	0.8589 -0.8917
2450006 +	0.5453 -0.8944	0.5953 -0.8934	0.6464 -0.8960	0.8664 -0.8950
0.4977 -0.8923	0.5477 -0.8969	0.5978 -0.8954	0.6488 -0.8952	0.8886 -0.8967
0.5001 -0.8946	0.5500 -0.8955	0.6002 -0.8919	0.6564 -0.8927	0.8955 -0.8973
0.5024 -0.8965	0.5524 -0.8959	0.6026 -0.8917	0.6591 -0.8953	0.9028 -0.8971
0.5048 -0.8954	0.5546 -0.8954	0.6049 -0.8948	0.6614 -0.8954	0.9124 -0.8911
0.5072 -0.8909	0.5570 -0.8953	0.6072 -0.8947	0.6641 -0.8942	0.9194 -0.8910
0.5096 -0.8950	0.5595 -0.8960	0.6096 -0.8947	0.6666 -0.8950	0.9262 -0.8914
0.5120 -0.8969	0.5619 -0.8931	0.6120 -0.8949	0.6689 -0.8937	0.9336 -0.8878
0.5143 -0.8932	0.5642 -0.8944	0.6145 -0.8949	0.6712 -0.8947	0.9402 -0.8882
0.5167 -0.8949	0.5667 -0.8946	0.6171 -0.8926	0.6816 -0.8912	0.9476 -0.8892
0.5192 -0.8939	0.5691 -0.8962	0.6195 -0.8921	0.6885 -0.8935	0.9542 -0.8976
0.5215 -0.8953	0.5713 -0.8947	0.6217 -0.8920	0.6910 -0.8942	0.9681 -0.8917
0.5239 -0.8948	0.5736 -0.8938	0.6242 -0.8928	0.6936 -0.8968	0.9746 -0.8989
0.5263 -0.8909	0.5761 -0.8971	0.6267 -0.8940	0.6960 -0.8962	0.9810 -0.8894
0.5287 -0.8940	0.5786 -0.8963	0.6292 -0.8947	0.6985 -0.8941	
0.5312 -0.8964	0.5810 -0.8929	0.6317 -0.8961	0.7010 -0.8936	

Table 29. Strömgren y observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

HR 1430 - HR	0.5547 -0.7543	0.6444 -0.7481	0.5631 -0.7484	0.6560 -0.7431
1358	0.5577 -0.7470	0.6473 -0.7498	0.5670 -0.7508	0.6596 -0.7493
y colour	0.5609 -0.7515	0.6504 -0.7498	0.5707 -0.7544	0.6634 -0.7520
2449994 +	0.5639 -0.7497	0.6536 -0.7491	0.5793 -0.7615	0.6827 -0.7542
0.4979 -0.7479	0.5684 -0.7498	0.6571 -0.7496	0.5831 -0.7551	0.6866 -0.7459
0.5001 -0.7453	0.5722 -0.7482	0.6602 -0.7508	0.5864 -0.7530	0.6902 -0.7469
0.5025 -0.7480	0.5757 -0.7493	0.6645 -0.7532	0.5906 -0.7496	0.6939 -0.7525
0.5057 -0.7460	0.5789 -0.7495	0.6676 -0.7488	0.5974 -0.7520	0.6980 -0.7425
0.5092 -0.7483	0.5822 -0.7488	0.6708 -0.7492	0.6009 -0.7481	0.7019 -0.7490
0.5124 -0.7521	0.5855 -0.7509	0.6736 -0.7483	0.6040 -0.7533	0.7076 -0.7476
0.5153 -0.7464	0.5891 -0.7486	0.6773 -0.7491	0.6073 -0.7548	0.7108 -0.7490
0.5178 -0.7489	0.5933 -0.7522	0.6823 -0.7481	0.6104 -0.7522	2449997 +
0.5200 -0.7514	0.5965 -0.7529	2449996 +	0.6139 -0.7376	0.4850 -0.7492
0.5223 -0.7495	0.6018 -0.7511	0.5353 -0.7538	0.6175 -0.7431	0.4886 -0.7488
0.5251 -0.7440	0.6052 -0.7514	0.5384 -0.7542	0.6252 -0.7557	0.4918 -0.7483
0.5292 -0.7498	0.6086 -0.7472	0.5414 -0.7501	0.6305 -0.7460	0.4949 -0.7484
0.5317 -0.7487	0.6121 -0.7527	0.5443 -0.7512	0.6341 -0.7526	0.4986 -0.7507
0.5355 -0.7502	0.6168 -0.7475	0.5472 -0.7497	0.6373 -0.7473	0.5018 -0.7515
0.5392 -0.7526	0.6204 -0.7458	0.5500 -0.7485	0.6414 -0.7358	0.5053 -0.7543
0.5422 -0.7488	0.6247 -0.7515	0.5529 -0.7515	0.6452 -0.7428	0.5083 -0.7451
0.5453 -0.7494	0.6277 -0.7491	0.5559 -0.7456	0.6488 -0.7419	0.5117 -0.7485
0.5512 -0.7506	0.6329 -0.7528	0.5601 -0.7536	0.6525 -0.7376	0.5152 -0.7495

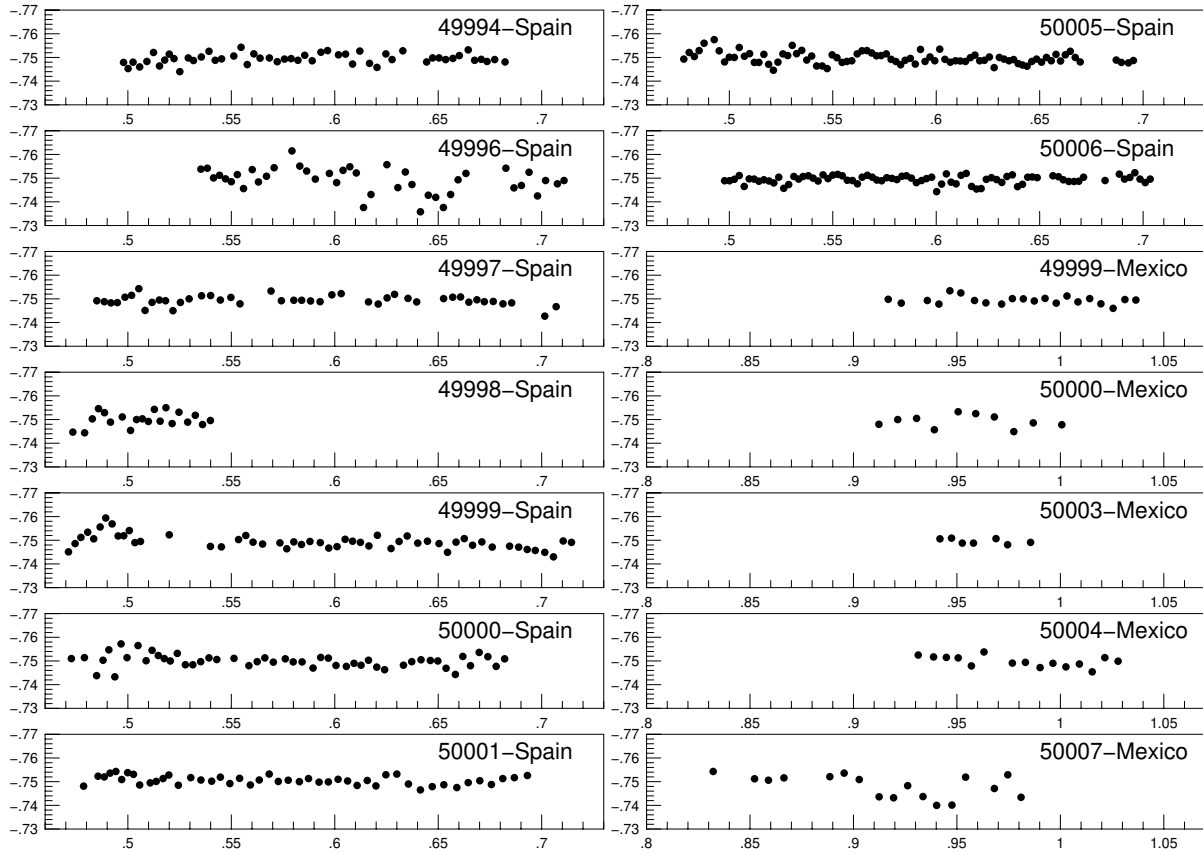


Figure 28: Strömgren y observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995).

0.5182	-0.7492	0.6210	-0.7478	0.4791	-0.7444	0.5399	-0.7496	0.5535	-0.7503
0.5218	-0.7450	0.6253	-0.7504	0.4828	-0.7503	2449999	+	0.5570	-0.7520
0.5254	-0.7485	0.6289	-0.7519	0.4858	-0.7546	0.4713	-0.7451	0.5605	-0.7492
0.5296	-0.7500	0.6354	-0.7502	0.4887	-0.7529	0.4745	-0.7486	0.5651	-0.7484
0.5356	-0.7513	0.6396	-0.7487	0.4916	-0.7489	0.4773	-0.7512	0.5735	-0.7489
0.5400	-0.7514	0.6526	-0.7501	0.4973	-0.7511	0.4806	-0.7534	0.5768	-0.7464
0.5447	-0.7495	0.6570	-0.7507	0.5013	-0.7454	0.4835	-0.7506	0.5802	-0.7493
0.5498	-0.7506	0.6608	-0.7508	0.5042	-0.7500	0.4866	-0.7556	0.5839	-0.7482
0.5542	-0.7479	0.6648	-0.7486	0.5070	-0.7503	0.4893	-0.7594	0.5880	-0.7495
0.5692	-0.7533	0.6687	-0.7496	0.5099	-0.7492	0.4924	-0.7569	0.5930	-0.7490
0.5742	-0.7492	0.6723	-0.7488	0.5128	-0.7543	0.4953	-0.7518	0.5971	-0.7467
0.5802	-0.7494	0.6766	-0.7489	0.5156	-0.7493	0.4980	-0.7519	0.6011	-0.7473
0.5840	-0.7494	0.6813	-0.7479	0.5184	-0.7550	0.5007	-0.7541	0.6050	-0.7504
0.5883	-0.7491	0.6855	-0.7483	0.5214	-0.7483	0.5034	-0.7490	0.6086	-0.7496
0.5929	-0.7488	0.7015	-0.7427	0.5247	-0.7531	0.5061	-0.7495	0.6124	-0.7491
0.5986	-0.7517	0.7070	-0.7467	0.5289	-0.7489	0.5200	-0.7523	0.6165	-0.7476
0.6031	-0.7522	2449998	+	0.5326	-0.7518	0.5399	-0.7474	0.6206	-0.7521
0.6163	-0.7487	0.4734	-0.7447	0.5361	-0.7479	0.5452	-0.7472	0.6272	-0.7465

0.6311	-0.7495	0.4967	-0.7572	0.9305	-0.7505	0.6471	-0.7479	0.5121	-0.7479
0.6350	-0.7518	0.4996	-0.7514	0.9391	-0.7457	0.6527	-0.7487	0.5143	-0.7479
0.6401	-0.7488	0.5049	-0.7565	0.9506	-0.7533	0.6590	-0.7475	0.5167	-0.7513
0.6448	-0.7496	0.5088	-0.7501	0.9591	-0.7525	0.6645	-0.7496	0.5190	-0.7471
0.6504	-0.7486	0.5117	-0.7545	0.9681	-0.7511	0.6701	-0.7504	0.5213	-0.7446
0.6545	-0.7449	0.5147	-0.7523	0.9775	-0.7449	0.6757	-0.7488	0.5235	-0.7480
0.6586	-0.7492	0.5176	-0.7510	0.9869	-0.7486	0.6812	-0.7513	0.5259	-0.7515
0.6626	-0.7507	0.5205	-0.7500	2450001 +		0.6868	-0.7517	0.5282	-0.7508
0.6666	-0.7479	0.5239	-0.7532	0.0007	-0.7478	0.6931	-0.7526	0.5304	-0.7551
0.6711	-0.7493	0.5278	-0.7484	0.4786	-0.7481	2450003 +		0.5325	-0.7516
0.6761	-0.7471	0.5314	-0.7484	0.4856	-0.7523	0.9418	-0.7506	0.5350	-0.7530
0.6845	-0.7475	0.5352	-0.7497	0.4886	-0.7520	0.9474	-0.7509	0.5374	-0.7489
0.6889	-0.7471	0.5392	-0.7513	0.4914	-0.7536	0.9526	-0.7488	0.5398	-0.7506
0.6930	-0.7461	0.5430	-0.7506	0.4942	-0.7543	0.9580	-0.7488	0.5422	-0.7464
0.6969	-0.7457	0.5513	-0.7511	0.4970	-0.7509	0.9689	-0.7507	0.5449	-0.7464
0.7015	-0.7449	0.5585	-0.7480	0.4999	-0.7538	0.9745	-0.7481	0.5473	-0.7453
0.7057	-0.7430	0.5625	-0.7497	0.5027	-0.7531	0.9856	-0.7491	0.5497	-0.7511
0.7104	-0.7497	0.5662	-0.7513	0.5057	-0.7486	2450004 +		0.5520	-0.7499
0.7144	-0.7491	0.5703	-0.7495	0.5108	-0.7495	0.9313	-0.7525	0.5545	-0.7479
0.9168	-0.7498	0.5761	-0.7509	0.5137	-0.7501	0.9387	-0.7517	0.5568	-0.7483
0.9231	-0.7482	0.5799	-0.7496	0.5170	-0.7513	0.9449	-0.7515	0.5592	-0.7486
0.9357	-0.7493	0.5842	-0.7496	0.5198	-0.7528	0.9506	-0.7513	0.5618	-0.7515
0.9413	-0.7478	0.5895	-0.7470	0.5244	-0.7485	0.9570	-0.7479	0.5641	-0.7528
0.9466	-0.7534	0.5932	-0.7515	0.5304	-0.7517	0.9631	-0.7538	0.5665	-0.7529
0.9519	-0.7525	0.5969	-0.7512	0.5353	-0.7507	0.9768	-0.7491	0.5688	-0.7519
0.9585	-0.7493	0.6006	-0.7481	0.5405	-0.7502	0.9831	-0.7494	0.5711	-0.7507
0.9640	-0.7483	0.6056	-0.7477	0.5447	-0.7519	0.9902	-0.7472	0.5734	-0.7508
0.9716	-0.7478	0.6093	-0.7490	0.5493	-0.7492	0.9964	-0.7490	0.5759	-0.7515
0.9768	-0.7501	0.6127	-0.7482	0.5540	-0.7514	2450005 +		0.5782	-0.7492
0.9821	-0.7500	0.6163	-0.7503	0.5592	-0.7486	0.0027	-0.7475	0.5805	-0.7483
0.9874	-0.7491	0.6203	-0.7474	0.5635	-0.7507	0.0092	-0.7487	0.5828	-0.7469
0.9926	-0.7502	0.6241	-0.7463	0.5683	-0.7532	0.0154	-0.7454	0.5850	-0.7488
0.9980	-0.7482	0.6332	-0.7482	0.5727	-0.7501	0.0215	-0.7514	0.5875	-0.7496
2450000 +		0.6372	-0.7497	0.5775	-0.7506	0.0279	-0.7499	0.5899	-0.7472
0.0032	-0.7512	0.6417	-0.7505	0.5829	-0.7500	0.4780	-0.7493	0.5924	-0.7534
0.0085	-0.7487	0.6462	-0.7502	0.5873	-0.7513	0.4806	-0.7521	0.5946	-0.7483
0.0142	-0.7501	0.6498	-0.7500	0.5924	-0.7498	0.4831	-0.7504	0.5970	-0.7502
0.0196	-0.7479	0.6538	-0.7469	0.5969	-0.7499	0.4854	-0.7529	0.5993	-0.7486
0.0255	-0.7460	0.6583	-0.7443	0.6016	-0.7510	0.4878	-0.7560	0.6017	-0.7535
0.0312	-0.7497	0.6619	-0.7519	0.6062	-0.7503	0.4927	-0.7575	0.6042	-0.7492
0.0365	-0.7495	0.6656	-0.7480	0.6108	-0.7484	0.4951	-0.7528	0.6068	-0.7480
0.4727	-0.7510	0.6698	-0.7536	0.6157	-0.7505	0.4977	-0.7481	0.6093	-0.7486
0.4790	-0.7514	0.6740	-0.7518	0.6199	-0.7482	0.5000	-0.7501	0.6116	-0.7485
0.4849	-0.7438	0.6780	-0.7477	0.6247	-0.7529	0.5024	-0.7500	0.6141	-0.7483
0.4880	-0.7503	0.6821	-0.7509	0.6300	-0.7532	0.5048	-0.7542	0.6165	-0.7499
0.4908	-0.7547	0.9123	-0.7480	0.6356	-0.7490	0.5073	-0.7505	0.6187	-0.7510
0.4937	-0.7433	0.9214	-0.7500	0.6414	-0.7465	0.5098	-0.7516	0.6210	-0.7486

0.6233 -0.7488	2450006 +	0.5546 -0.7510	0.6145 -0.7520	0.6936 -0.7503
0.6257 -0.7502	0.4977 -0.7489	0.5570 -0.7491	0.6171 -0.7465	0.6960 -0.7523
0.6280 -0.7457	0.5001 -0.7489	0.5595 -0.7490	0.6195 -0.7454	0.6985 -0.7496
0.6305 -0.7500	0.5024 -0.7495	0.5619 -0.7476	0.6217 -0.7456	0.7010 -0.7481
0.6328 -0.7493	0.5048 -0.7511	0.5642 -0.7504	0.6242 -0.7495	0.7034 -0.7496
0.6352 -0.7486	0.5072 -0.7465	0.5667 -0.7512	0.6267 -0.7502	2450007 +
0.6374 -0.7491	0.5096 -0.7497	0.5691 -0.7504	0.6292 -0.7494	0.8322 -0.7543
0.6396 -0.7474	0.5120 -0.7496	0.5713 -0.7492	0.6317 -0.7482	0.8522 -0.7512
0.6417 -0.7468	0.5143 -0.7487	0.5736 -0.7489	0.6342 -0.7507	0.8589 -0.7506
0.6439 -0.7463	0.5167 -0.7493	0.5761 -0.7502	0.6368 -0.7514	0.8664 -0.7516
0.6462 -0.7483	0.5192 -0.7488	0.5786 -0.7499	0.6393 -0.7464	0.8886 -0.7521
0.6485 -0.7493	0.5215 -0.7480	0.5810 -0.7494	0.6417 -0.7474	0.8955 -0.7536
0.6509 -0.7480	0.5239 -0.7504	0.5834 -0.7508	0.6442 -0.7504	0.9028 -0.7509
0.6533 -0.7500	0.5263 -0.7457	0.5856 -0.7510	0.6464 -0.7505	0.9124 -0.7436
0.6556 -0.7486	0.5287 -0.7473	0.5880 -0.7500	0.6488 -0.7502	0.9194 -0.7432
0.6579 -0.7513	0.5312 -0.7507	0.5904 -0.7481	0.6564 -0.7510	0.9262 -0.7483
0.6601 -0.7485	0.5335 -0.7496	0.5929 -0.7490	0.6591 -0.7506	0.9336 -0.7437
0.6624 -0.7511	0.5357 -0.7507	0.5953 -0.7498	0.6614 -0.7493	0.9402 -0.7400
0.6648 -0.7526	0.5382 -0.7510	0.5978 -0.7504	0.6641 -0.7486	0.9476 -0.7401
0.6672 -0.7500	0.5405 -0.7500	0.6002 -0.7443	0.6666 -0.7486	0.9542 -0.7519
0.6696 -0.7481	0.5429 -0.7488	0.6026 -0.7475	0.6689 -0.7487	0.9681 -0.7471
0.6870 -0.7489	0.5453 -0.7514	0.6049 -0.7518	0.6712 -0.7504	0.9746 -0.7529
0.6895 -0.7479	0.5477 -0.7498	0.6072 -0.7483	0.6816 -0.7490	0.9810 -0.7434
0.6929 -0.7477	0.5500 -0.7513	0.6096 -0.7476	0.6885 -0.7517	
0.6953 -0.7487	0.5524 -0.7516	0.6120 -0.7512	0.6910 -0.7496	

Table 30. Strömgren u observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

HR 1430 -1358	0.5355 -0.7712	0.5933 -0.7764	0.6602 -0.7726	0.5601 -0.7692
u colour	0.5392 -0.7770	0.5965 -0.7734	0.6645 -0.7734	0.5631 -0.7728
2449994 +	0.5422 -0.7707	0.6018 -0.7768	0.6676 -0.7781	0.5670 -0.7762
0.4979 -0.7701	0.5453 -0.7710	0.6052 -0.7751	0.6708 -0.7730	0.5707 -0.7747
0.5001 -0.7720	0.5512 -0.7711	0.6086 -0.7742	0.6736 -0.7681	0.5793 -0.7873
0.5025 -0.7667	0.5547 -0.7713	0.6121 -0.7792	0.6773 -0.7692	0.5831 -0.7752
0.5057 -0.7655	0.5577 -0.7759	0.6168 -0.7776	0.6823 -0.7712	0.5864 -0.7697
0.5092 -0.7739	0.5609 -0.7724	0.6204 -0.7693	2449996 +	0.5906 -0.7758
0.5124 -0.7750	0.5639 -0.7670	0.6247 -0.7780	0.5353 -0.7726	0.5974 -0.7711
0.5153 -0.7805	0.5684 -0.7679	0.6277 -0.7743	0.5384 -0.7650	0.6009 -0.7752
0.5178 -0.7730	0.5722 -0.7745	0.6329 -0.7783	0.5414 -0.7684	0.6040 -0.7767
0.5200 -0.7755	0.5757 -0.7728	0.6444 -0.7717	0.5443 -0.7630	0.6073 -0.7807
0.5223 -0.7669	0.5789 -0.7791	0.6473 -0.7736	0.5472 -0.7783	0.6104 -0.7767
0.5251 -0.7717	0.5822 -0.7692	0.6504 -0.7772	0.5500 -0.7778	0.6139 -0.7610
0.5292 -0.7770	0.5855 -0.7765	0.6536 -0.7710	0.5529 -0.7692	0.6175 -0.7666
0.5317 -0.7704	0.5891 -0.7703	0.6571 -0.7791	0.5559 -0.7655	0.6252 -0.7830

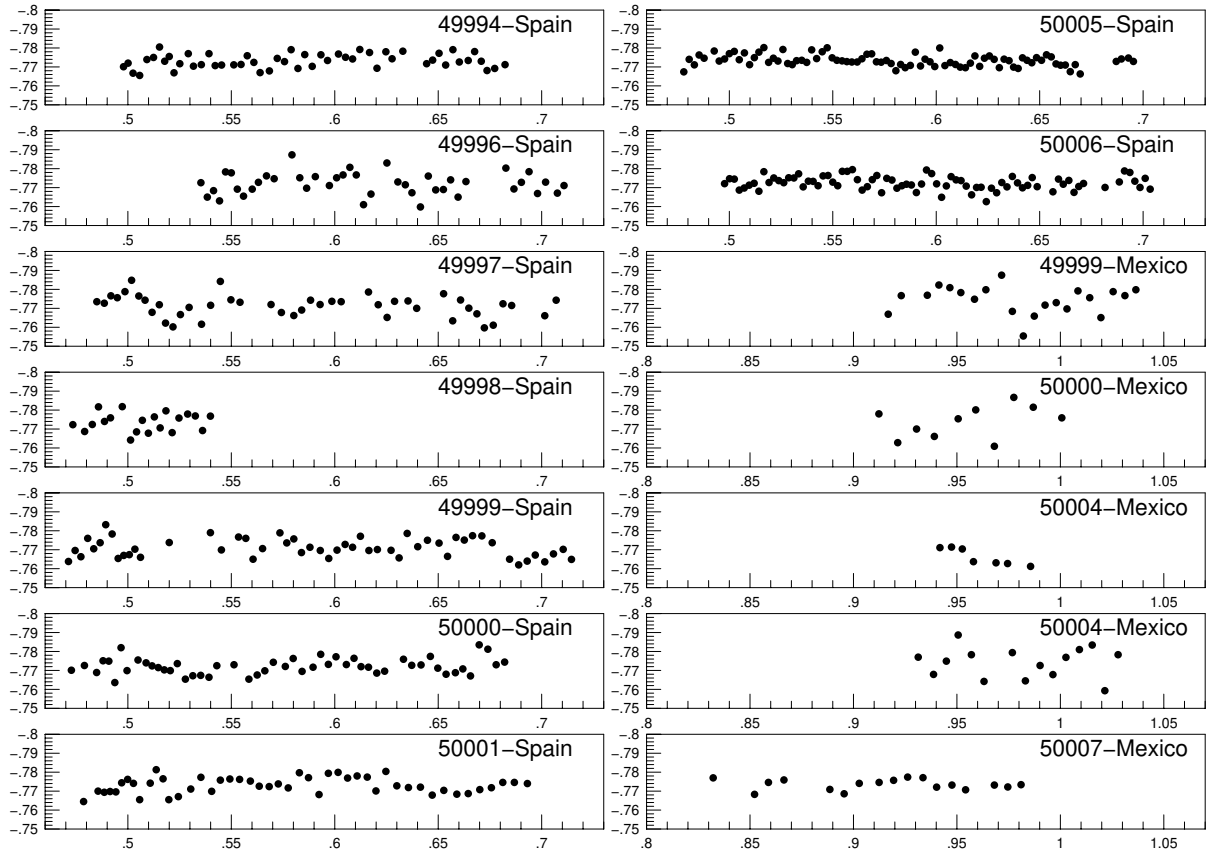


Figure 29: Strömgren u observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995).

0.6305 −0.7730	2449997 +	0.5498 −0.7745	0.6608 −0.7744	0.5042 −0.7685
0.6341 −0.7715	0.4850 −0.7735	0.5542 −0.7732	0.6648 −0.7701	0.5070 −0.7746
0.6373 −0.7673	0.4886 −0.7727	0.5692 −0.7720	0.6687 −0.7671	0.5099 −0.7678
0.6414 −0.7598	0.4918 −0.7766	0.5742 −0.7678	0.6723 −0.7597	0.5128 −0.7764
0.6452 −0.7761	0.4949 −0.7756	0.5802 −0.7662	0.6766 −0.7611	0.5156 −0.7706
0.6488 −0.7688	0.4986 −0.7788	0.5840 −0.7691	0.6813 −0.7724	0.5184 −0.7796
0.6525 −0.7690	0.5018 −0.7848	0.5883 −0.7743	0.6855 −0.7715	0.5214 −0.7681
0.6560 −0.7741	0.5053 −0.7765	0.5929 −0.7720	0.7015 −0.7661	0.5247 −0.7758
0.6596 −0.7650	0.5083 −0.7743	0.5986 −0.7737	0.7070 −0.7743	0.5289 −0.7779
0.6634 −0.7732	0.5117 −0.7679	0.6031 −0.7735	2449998 +	0.5326 −0.7769
0.6827 −0.7803	0.5152 −0.7719	0.6163 −0.7786	0.4734 −0.7723	0.5361 −0.7692
0.6866 −0.7693	0.5182 −0.7622	0.6210 −0.7719	0.4791 −0.7687	0.5399 −0.7768
0.6902 −0.7728	0.5218 −0.7602	0.6253 −0.7652	0.4828 −0.7724	2449999 +
0.6939 −0.7784	0.5254 −0.7667	0.6289 −0.7737	0.4858 −0.7817	0.4713 −0.7638
0.6980 −0.7669	0.5296 −0.7705	0.6354 −0.7739	0.4887 −0.7740	0.4745 −0.7696
0.7019 −0.7729	0.5356 −0.7616	0.6396 −0.7700	0.4916 −0.7759	0.4773 −0.7663
0.7076 −0.7671	0.5400 −0.7716	0.6526 −0.7777	0.4973 −0.7818	0.4806 −0.7760
0.7108 −0.7711	0.5447 −0.7842	0.6570 −0.7634	0.5013 −0.7642	0.4835 −0.7705

0.4866 -0.7737	0.7144 -0.7649	0.5703 -0.7743	0.5108 -0.7742	0.9313 -0.7770
0.4893 -0.7832	0.9168 -0.7669	0.5761 -0.7721	0.5137 -0.7813	0.9387 -0.7679
0.4924 -0.7783	0.9231 -0.7767	0.5799 -0.7763	0.5170 -0.7765	0.9449 -0.7749
0.4953 -0.7654	0.9357 -0.7769	0.5842 -0.7695	0.5198 -0.7655	0.9506 -0.7887
0.4980 -0.7670	0.9413 -0.7823	0.5895 -0.7717	0.5244 -0.7671	0.9570 -0.7783
0.5007 -0.7674	0.9466 -0.7809	0.5932 -0.7785	0.5304 -0.7711	0.9631 -0.7642
0.5034 -0.7703	0.9519 -0.7783	0.5969 -0.7732	0.5353 -0.7773	0.9768 -0.7794
0.5061 -0.7660	0.9585 -0.7748	0.6006 -0.7772	0.5405 -0.7699	0.9831 -0.7645
0.5200 -0.7738	0.9640 -0.7798	0.6056 -0.7731	0.5447 -0.7758	0.9902 -0.7726
0.5399 -0.7790	0.9716 -0.7875	0.6093 -0.7764	0.5493 -0.7764	0.9964 -0.7678
0.5452 -0.7699	0.9768 -0.7684	0.6127 -0.7720	0.5540 -0.7762	2450005 +
0.5535 -0.7767	0.9821 -0.7554	0.6163 -0.7717	0.5592 -0.7753	0.0027 -0.7769
0.5570 -0.7760	0.9874 -0.7659	0.6203 -0.7686	0.5635 -0.7726	0.0092 -0.7810
0.5605 -0.7650	0.9926 -0.7717	0.6241 -0.7696	0.5683 -0.7724	0.0154 -0.7834
0.5651 -0.7706	0.9980 -0.7730	0.6332 -0.7759	0.5727 -0.7738	0.0215 -0.7593
0.5735 -0.7789	2450000 +	0.6372 -0.7727	0.5775 -0.7717	0.0279 -0.7783
0.5768 -0.7736	0.0032 -0.7697	0.6417 -0.7729	0.5829 -0.7797	0.4780 -0.7674
0.5802 -0.7757	0.0085 -0.7792	0.6462 -0.7774	0.5873 -0.7771	0.4806 -0.7740
0.5839 -0.7685	0.0142 -0.7756	0.6498 -0.7712	0.5924 -0.7682	0.4831 -0.7711
0.5880 -0.7713	0.0196 -0.7651	0.6538 -0.7680	0.5969 -0.7794	0.4854 -0.7763
0.5930 -0.7696	0.0255 -0.7788	0.6583 -0.7688	0.6016 -0.7799	0.4878 -0.7746
0.5971 -0.7654	0.0312 -0.7767	0.6619 -0.7708	0.6062 -0.7769	0.4927 -0.7784
0.6011 -0.7698	0.0365 -0.7798	0.6656 -0.7671	0.6108 -0.7780	0.4951 -0.7731
0.6050 -0.7728	0.4727 -0.7701	0.6698 -0.7835	0.6157 -0.7774	0.4977 -0.7742
0.6086 -0.7713	0.4790 -0.7726	0.6740 -0.7812	0.6199 -0.7701	0.5000 -0.7770
0.6124 -0.7771	0.4849 -0.7689	0.6780 -0.7730	0.6247 -0.7804	0.5024 -0.7782
0.6165 -0.7696	0.4880 -0.7751	0.6821 -0.7744	0.6300 -0.7728	0.5048 -0.7738
0.6206 -0.7701	0.4908 -0.7749	0.9123 -0.7780	0.6356 -0.7719	0.5073 -0.7774
0.6272 -0.7697	0.4937 -0.7636	0.9214 -0.7628	0.6414 -0.7721	0.5098 -0.7712
0.6311 -0.7657	0.4967 -0.7820	0.9305 -0.7700	0.6471 -0.7679	0.5121 -0.7749
0.6350 -0.7786	0.4996 -0.7699	0.9391 -0.7661	0.6527 -0.7704	0.5143 -0.7778
0.6401 -0.7716	0.5049 -0.7755	0.9506 -0.7754	0.6590 -0.7684	0.5167 -0.7802
0.6448 -0.7750	0.5088 -0.7740	0.9591 -0.7801	0.6645 -0.7687	0.5190 -0.7724
0.6504 -0.7735	0.5117 -0.7724	0.9681 -0.7609	0.6701 -0.7708	0.5213 -0.7746
0.6545 -0.7665	0.5147 -0.7715	0.9775 -0.7867	0.6757 -0.7718	0.5235 -0.7731
0.6586 -0.7765	0.5176 -0.7703	0.9869 -0.7815	0.6812 -0.7746	0.5259 -0.7792
0.6626 -0.7751	0.5205 -0.7699	2450001 +	0.6868 -0.7746	0.5282 -0.7718
0.6666 -0.7774	0.5239 -0.7736	0.0007 -0.7759	0.6931 -0.7740	0.5304 -0.7712
0.6711 -0.7773	0.5278 -0.7654	0.4786 -0.7645	2450003 +	0.5325 -0.7733
0.6761 -0.7737	0.5314 -0.7672	0.4856 -0.7700	0.9418 -0.7711	0.5350 -0.7735
0.6845 -0.7650	0.5352 -0.7674	0.4886 -0.7694	0.9474 -0.7714	0.5374 -0.7724
0.6889 -0.7620	0.5392 -0.7664	0.4914 -0.7698	0.9526 -0.7704	0.5398 -0.7790
0.6930 -0.7640	0.5430 -0.7725	0.4942 -0.7696	0.9580 -0.7637	0.5422 -0.7744
0.6969 -0.7672	0.5513 -0.7730	0.4970 -0.7744	0.9689 -0.7631	0.5449 -0.7780
0.7015 -0.7636	0.5585 -0.7654	0.4999 -0.7762	0.9745 -0.7627	0.5473 -0.7801
0.7057 -0.7678	0.5625 -0.7676	0.5027 -0.7741	0.9856 -0.7612	0.5497 -0.7748
0.7104 -0.7702	0.5662 -0.7698	0.5057 -0.7655	2450004 +	0.5520 -0.7735

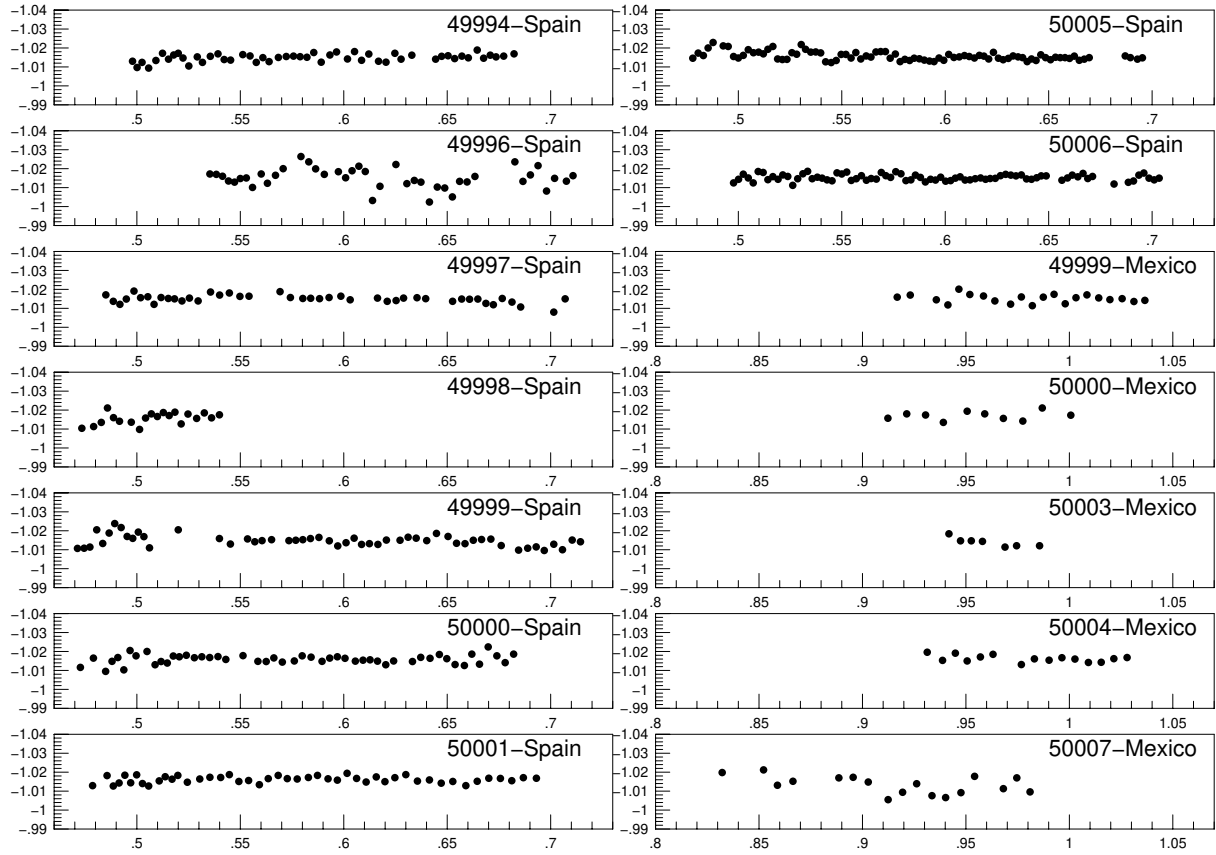


Figure 30: Strömgren v observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995).

0.5443 –1.0135	0.6139 –1.0032	0.7019 –1.0149	0.5356 –1.0186	0.6396 –1.0151
0.5472 –1.0129	0.6175 –1.0107	0.7076 –1.0134	0.5400 –1.0170	0.6526 –1.0137
0.5500 –1.0148	0.6252 –1.0222	0.7108 –1.0163	0.5447 –1.0181	0.6570 –1.0149
0.5529 –1.0151	0.6305 –1.0121	2449997 +	0.5498 –1.0163	0.6608 –1.0148
0.5559 –1.0101	0.6341 –1.0138	0.4850 –1.0171	0.5542 –1.0164	0.6648 –1.0149
0.5601 –1.0172	0.6373 –1.0129	0.4886 –1.0137	0.5692 –1.0188	0.6687 –1.0126
0.5631 –1.0123	0.6414 –1.0024	0.4918 –1.0121	0.5742 –1.0157	0.6723 –1.0119
0.5670 –1.0165	0.6452 –1.0103	0.4949 –1.0149	0.5802 –1.0152	0.6766 –1.0152
0.5707 –1.0200	0.6488 –1.0098	0.4986 –1.0191	0.5840 –1.0153	0.6813 –1.0133
0.5793 –1.0264	0.6525 –1.0051	0.5018 –1.0156	0.5883 –1.0151	0.6855 –1.0107
0.5831 –1.0236	0.6560 –1.0133	0.5053 –1.0161	0.5929 –1.0157	0.7015 –1.0080
0.5864 –1.0199	0.6596 –1.0130	0.5083 –1.0121	0.5986 –1.0164	0.7070 –1.0150
0.5906 –1.0170	0.6634 –1.0159	0.5117 –1.0157	0.6031 –1.0145	2449998 +
0.5974 –1.0184	0.6827 –1.0236	0.5152 –1.0152	0.6163 –1.0154	0.4734 –1.0104
0.6009 –1.0152	0.6866 –1.0133	0.5182 –1.0150	0.6210 –1.0137	0.4791 –1.0113
0.6040 –1.0189	0.6902 –1.0167	0.5218 –1.0139	0.6253 –1.0141	0.4828 –1.0135
0.6073 –1.0213	0.6939 –1.0216	0.5254 –1.0154	0.6289 –1.0154	0.4858 –1.0211
0.6104 –1.0185	0.6980 –1.0082	0.5296 –1.0139	0.6354 –1.0156	0.4887 –1.0160

0.4916 -1.0141	0.6165 -1.0128	0.4880 -1.0148	0.6821 -1.0186	0.6300 -1.0187
0.4973 -1.0136	0.6206 -1.0151	0.4908 -1.0168	0.9123 -1.0157	0.6356 -1.0153
0.5013 -1.0098	0.6272 -1.0150	0.4937 -1.0103	0.9214 -1.0180	0.6414 -1.0159
0.5042 -1.0158	0.6311 -1.0166	0.4967 -1.0205	0.9305 -1.0174	0.6471 -1.0142
0.5070 -1.0180	0.6350 -1.0161	0.4996 -1.0177	0.9391 -1.0135	0.6527 -1.0151
0.5099 -1.0166	0.6401 -1.0148	0.5049 -1.0200	0.9506 -1.0194	0.6590 -1.0129
0.5128 -1.0187	0.6448 -1.0186	0.5088 -1.0130	0.9591 -1.0180	0.6645 -1.0152
0.5156 -1.0171	0.6504 -1.0170	0.5117 -1.0147	0.9681 -1.0156	0.6701 -1.0168
0.5184 -1.0189	0.6545 -1.0134	0.5147 -1.0139	0.9775 -1.0142	0.6757 -1.0167
0.5214 -1.0127	0.6586 -1.0132	0.5176 -1.0176	0.9869 -1.0211	0.6812 -1.0155
0.5247 -1.0179	0.6626 -1.0150	0.5205 -1.0172	2450001 +	0.6868 -1.0171
0.5289 -1.0156	0.6666 -1.0154	0.5239 -1.0180	0.0007 -1.0173	0.6931 -1.0168
0.5326 -1.0185	0.6711 -1.0156	0.5278 -1.0167	0.4786 -1.0129	2450003 +
0.5361 -1.0159	0.6761 -1.0122	0.5314 -1.0172	0.4856 -1.0182	0.9418 -1.0184
0.5399 -1.0175	0.6845 -1.0098	0.5352 -1.0168	0.4886 -1.0127	0.9474 -1.0147
2449999 +	0.6889 -1.0108	0.5392 -1.0173	0.4914 -1.0143	0.9526 -1.0147
0.4713 -1.0107	0.6930 -1.0115	0.5430 -1.0158	0.4942 -1.0184	0.9580 -1.0144
0.4745 -1.0108	0.6969 -1.0096	0.5513 -1.0178	0.4970 -1.0144	0.9689 -1.0114
0.4773 -1.0114	0.7015 -1.0129	0.5585 -1.0148	0.4999 -1.0186	0.9745 -1.0121
0.4806 -1.0205	0.7057 -1.0100	0.5625 -1.0147	0.5027 -1.0140	0.9856 -1.0121
0.4835 -1.0133	0.7104 -1.0151	0.5662 -1.0166	0.5057 -1.0127	2450004 +
0.4866 -1.0188	0.7144 -1.0142	0.5703 -1.0144	0.5108 -1.0154	0.9313 -1.0196
0.4893 -1.0238	0.9168 -1.0159	0.5761 -1.0150	0.5137 -1.0176	0.9387 -1.0153
0.4924 -1.0217	0.9231 -1.0170	0.5799 -1.0177	0.5170 -1.0163	0.9449 -1.0191
0.4953 -1.0170	0.9357 -1.0145	0.5842 -1.0170	0.5198 -1.0183	0.9506 -1.0150
0.4980 -1.0160	0.9413 -1.0118	0.5895 -1.0148	0.5244 -1.0147	0.9570 -1.0171
0.5007 -1.0193	0.9466 -1.0201	0.5932 -1.0165	0.5304 -1.0164	0.9631 -1.0185
0.5034 -1.0169	0.9519 -1.0173	0.5969 -1.0172	0.5353 -1.0173	0.9768 -1.0131
0.5061 -1.0110	0.9585 -1.0165	0.6006 -1.0164	0.5405 -1.0172	0.9831 -1.0161
0.5200 -1.0205	0.9640 -1.0139	0.6056 -1.0149	0.5447 -1.0187	0.9902 -1.0154
0.5399 -1.0159	0.9716 -1.0122	0.6093 -1.0154	0.5493 -1.0151	0.9964 -1.0167
0.5452 -1.0130	0.9768 -1.0160	0.6127 -1.0156	0.5540 -1.0156	2450005 +
0.5535 -1.0157	0.9821 -1.0114	0.6163 -1.0149	0.5592 -1.0134	0.0027 -1.0160
0.5570 -1.0142	0.9874 -1.0159	0.6203 -1.0130	0.5635 -1.0166	0.0092 -1.0142
0.5605 -1.0148	0.9926 -1.0174	0.6241 -1.0150	0.5683 -1.0183	0.0154 -1.0143
0.5651 -1.0153	0.9980 -1.0124	0.6332 -1.0147	0.5727 -1.0166	0.0215 -1.0162
0.5735 -1.0148	2450000 +	0.6372 -1.0169	0.5775 -1.0164	0.0279 -1.0168
0.5768 -1.0150	0.0032 -1.0156	0.6417 -1.0164	0.5829 -1.0172	0.4780 -1.0146
0.5802 -1.0153	0.0085 -1.0171	0.6462 -1.0184	0.5873 -1.0183	0.4806 -1.0173
0.5839 -1.0159	0.0142 -1.0155	0.6498 -1.0162	0.5924 -1.0165	0.4831 -1.0160
0.5880 -1.0165	0.0196 -1.0146	0.6538 -1.0131	0.5969 -1.0158	0.4854 -1.0200
0.5930 -1.0147	0.0255 -1.0151	0.6583 -1.0126	0.6016 -1.0194	0.4878 -1.0229
0.5971 -1.0120	0.0312 -1.0136	0.6619 -1.0186	0.6062 -1.0167	0.4927 -1.0211
0.6011 -1.0137	0.0365 -1.0142	0.6656 -1.0133	0.6108 -1.0148	0.4951 -1.0208
0.6050 -1.0161	0.4727 -1.0116	0.6698 -1.0224	0.6157 -1.0175	0.4977 -1.0155
0.6086 -1.0128	0.4790 -1.0165	0.6740 -1.0177	0.6199 -1.0150	0.5000 -1.0147
0.6124 -1.0132	0.4849 -1.0095	0.6780 -1.0141	0.6247 -1.0171	0.5024 -1.0161

0.5048 -1.0191	0.5875 -1.0143	0.6696 -1.0149	0.5667 -1.0145	0.6564 -1.0139
0.5073 -1.0175	0.5899 -1.0136	0.6870 -1.0158	0.5691 -1.0180	0.6591 -1.0151
0.5098 -1.0178	0.5924 -1.0131	0.6895 -1.0149	0.5713 -1.0163	0.6614 -1.0166
0.5121 -1.0169	0.5946 -1.0128	0.6929 -1.0141	0.5736 -1.0154	0.6641 -1.0157
0.5143 -1.0193	0.5970 -1.0147	0.6953 -1.0148	0.5761 -1.0184	0.6666 -1.0175
0.5167 -1.0208	0.5993 -1.0135	2450006 +	0.5786 -1.0173	0.6689 -1.0148
0.5190 -1.0142	0.6017 -1.0166	0.4977 -1.0125	0.5810 -1.0137	0.6712 -1.0159
0.5213 -1.0139	0.6042 -1.0150	0.5001 -1.0144	0.5834 -1.0141	0.6816 -1.0119
0.5235 -1.0140	0.6068 -1.0153	0.5024 -1.0171	0.5856 -1.0166	0.6885 -1.0128
0.5259 -1.0175	0.6093 -1.0160	0.5048 -1.0151	0.5880 -1.0154	0.6910 -1.0135
0.5282 -1.0167	0.6116 -1.0155	0.5072 -1.0125	0.5904 -1.0130	0.6936 -1.0166
0.5304 -1.0218	0.6141 -1.0147	0.5096 -1.0185	0.5929 -1.0144	0.6960 -1.0177
0.5325 -1.0193	0.6165 -1.0161	0.5120 -1.0180	0.5953 -1.0140	0.6985 -1.0150
0.5350 -1.0178	0.6187 -1.0157	0.5143 -1.0142	0.5978 -1.0155	0.7010 -1.0141
0.5374 -1.0179	0.6210 -1.0142	0.5167 -1.0158	0.6002 -1.0134	0.7034 -1.0150
0.5398 -1.0174	0.6233 -1.0177	0.5192 -1.0144	0.6026 -1.0137	2450007 +
0.5422 -1.0127	0.6257 -1.0146	0.5215 -1.0167	0.6049 -1.0150	0.8322 -1.0198
0.5449 -1.0123	0.6280 -1.0138	0.5239 -1.0159	0.6072 -1.0157	0.8522 -1.0212
0.5473 -1.0134	0.6305 -1.0145	0.5263 -1.0112	0.6096 -1.0140	0.8589 -1.0131
0.5497 -1.0166	0.6328 -1.0158	0.5287 -1.0147	0.6120 -1.0141	0.8664 -1.0152
0.5520 -1.0166	0.6352 -1.0153	0.5312 -1.0173	0.6145 -1.0147	0.8886 -1.0170
0.5545 -1.0147	0.6374 -1.0149	0.5335 -1.0186	0.6171 -1.0151	0.8955 -1.0173
0.5568 -1.0176	0.6396 -1.0128	0.5357 -1.0147	0.6195 -1.0144	0.9028 -1.0148
0.5592 -1.0142	0.6417 -1.0142	0.5382 -1.0155	0.6217 -1.0148	0.9124 -1.0055
0.5618 -1.0158	0.6439 -1.0134	0.5405 -1.0150	0.6242 -1.0149	0.9194 -1.0094
0.5641 -1.0152	0.6462 -1.0164	0.5429 -1.0141	0.6267 -1.0163	0.9262 -1.0139
0.5665 -1.0179	0.6485 -1.0149	0.5453 -1.0136	0.6292 -1.0170	0.9336 -1.0076
0.5688 -1.0181	0.6509 -1.0138	0.5477 -1.0178	0.6317 -1.0166	0.9402 -1.0066
0.5711 -1.0181	0.6533 -1.0151	0.5500 -1.0172	0.6342 -1.0162	0.9476 -1.0092
0.5734 -1.0146	0.6556 -1.0149	0.5524 -1.0182	0.6368 -1.0167	0.9542 -1.0178
0.5759 -1.0168	0.6579 -1.0149	0.5546 -1.0138	0.6393 -1.0146	0.9681 -1.0113
0.5782 -1.0128	0.6601 -1.0145	0.5570 -1.0147	0.6417 -1.0144	0.9746 -1.0170
0.5805 -1.0140	0.6624 -1.0157	0.5595 -1.0163	0.6442 -1.0152	0.9810 -1.0096
0.5828 -1.0134	0.6648 -1.0135	0.5619 -1.0139	0.6464 -1.0162	
0.5850 -1.0146	0.6672 -1.0141	0.5642 -1.0148	0.6488 -1.0162	

Table 32. Strömgren b - y observations of HR 1430 – HR 1358 by E. Rodríguez, M. Páparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

HR 1430 - HR	0.5092 -0.1453	0.5317 -0.1448	0.5609 -0.1438	0.5891 -0.1435
1358	0.5124 -0.1445	0.5355 -0.1445	0.5639 -0.1428	0.5933 -0.1442
b- y colour	0.5153 -0.1483	0.5392 -0.1450	0.5684 -0.1448	0.5965 -0.1447
2449994 +	0.5178 -0.1466	0.5422 -0.1449	0.5722 -0.1461	0.6018 -0.1445
0.4979 -0.1445	0.5200 -0.1449	0.5453 -0.1430	0.5757 -0.1452	0.6052 -0.1462
0.5001 -0.1443	0.5223 -0.1434	0.5512 -0.1452	0.5789 -0.1463	0.6086 -0.1454
0.5025 -0.1449	0.5251 -0.1461	0.5547 -0.1423	0.5822 -0.1452	0.6121 -0.1448
0.5057 -0.1440	0.5292 -0.1463	0.5577 -0.1461	0.5855 -0.1459	0.6168 -0.1459

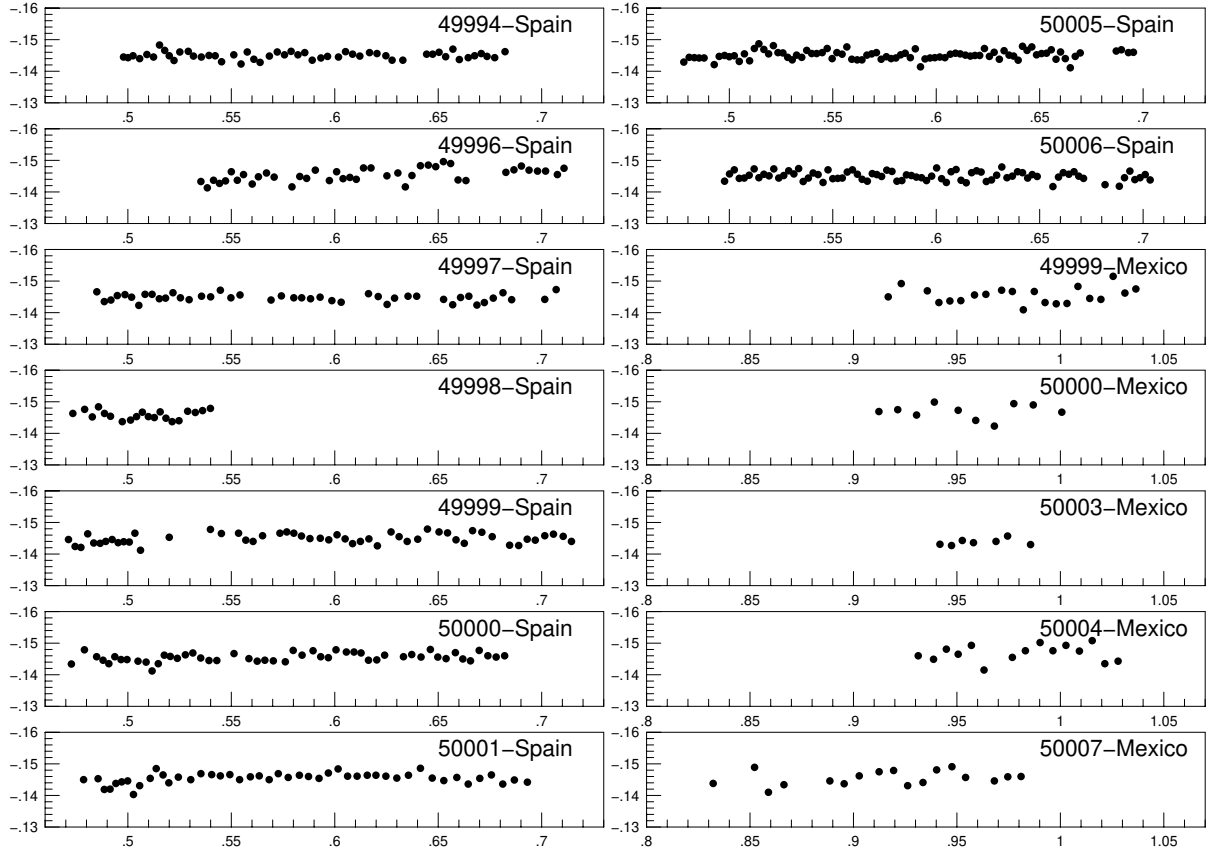


Figure 31: Strömgren $b-y$ observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995).

0.6204	-0.1456	0.5384	-0.1413	0.6073	-0.1446	0.6939	-0.1469	0.5254	-0.1447
0.6247	-0.1449	0.5414	-0.1437	0.6104	-0.1440	0.6980	-0.1466	0.5296	-0.1441
0.6277	-0.1435	0.5443	-0.1427	0.6139	-0.1476	0.7019	-0.1466	0.5356	-0.1452
0.6329	-0.1435	0.5472	-0.1435	0.6175	-0.1476	0.7076	-0.1455	0.5400	-0.1450
0.6444	-0.1454	0.5500	-0.1464	0.6252	-0.1451	0.7108	-0.1475	0.5447	-0.1471
0.6473	-0.1454	0.5529	-0.1437	0.6305	-0.1460	2449997	+	0.5498	-0.1447
0.6504	-0.1460	0.5559	-0.1455	0.6341	-0.1416	0.4850	-0.1466	0.5542	-0.1456
0.6536	-0.1446	0.5601	-0.1425	0.6373	-0.1452	0.4886	-0.1435	0.5692	-0.1440
0.6571	-0.1470	0.5631	-0.1448	0.6414	-0.1483	0.4918	-0.1440	0.5742	-0.1453
0.6602	-0.1437	0.5670	-0.1460	0.6452	-0.1485	0.4949	-0.1454	0.5802	-0.1447
0.6645	-0.1443	0.5707	-0.1447	0.6488	-0.1480	0.4986	-0.1457	0.5840	-0.1447
0.6676	-0.1449	0.5793	-0.1416	0.6525	-0.1496	0.5018	-0.1449	0.5883	-0.1444
0.6708	-0.1456	0.5831	-0.1449	0.6560	-0.1490	0.5053	-0.1423	0.5929	-0.1449
0.6736	-0.1447	0.5864	-0.1443	0.6596	-0.1438	0.5083	-0.1458	0.5986	-0.1438
0.6773	-0.1443	0.5906	-0.1469	0.6634	-0.1436	0.5117	-0.1458	0.6031	-0.1433
0.6823	-0.1462	0.5974	-0.1436	0.6827	-0.1462	0.5152	-0.1444	0.6163	-0.1460
2449996	+	0.6009	-0.1464	0.6866	-0.1470	0.5182	-0.1446	0.6210	-0.1451
0.5353	-0.1433	0.6040	-0.1442	0.6902	-0.1482	0.5218	-0.1463	0.6253	-0.1426

0.6289 -0.1446	0.5034 -0.1466	0.9519 -0.1438	0.5969 -0.1454	0.5353 -0.1469
0.6354 -0.1452	0.5061 -0.1412	0.9585 -0.1456	0.6006 -0.1479	0.5405 -0.1466
0.6396 -0.1452	0.5200 -0.1453	0.9640 -0.1458	0.6056 -0.1472	0.5447 -0.1462
0.6526 -0.1442	0.5399 -0.1478	0.9716 -0.1471	0.6093 -0.1472	0.5493 -0.1466
0.6570 -0.1425	0.5452 -0.1465	0.9768 -0.1467	0.6127 -0.1469	0.5540 -0.1450
0.6608 -0.1448	0.5535 -0.1466	0.9821 -0.1409	0.6163 -0.1446	0.5592 -0.1459
0.6648 -0.1452	0.5570 -0.1444	0.9874 -0.1467	0.6203 -0.1447	0.5635 -0.1462
0.6687 -0.1424	0.5605 -0.1440	0.9926 -0.1432	0.6241 -0.1462	0.5683 -0.1450
0.6723 -0.1432	0.5651 -0.1458	0.9980 -0.1428	0.6332 -0.1457	0.5727 -0.1469
0.6766 -0.1446	0.5735 -0.1466	2450000 +	0.6372 -0.1464	0.5775 -0.1457
0.6813 -0.1463	0.5768 -0.1470	0.0032 -0.1429	0.6417 -0.1456	0.5829 -0.1464
0.6855 -0.1441	0.5802 -0.1466	0.0085 -0.1483	0.6462 -0.1480	0.5873 -0.1460
0.7015 -0.1442	0.5839 -0.1457	0.0142 -0.1445	0.6498 -0.1456	0.5924 -0.1454
0.7070 -0.1473	0.5880 -0.1449	0.0196 -0.1442	0.6538 -0.1451	0.5969 -0.1471
2449998 +	0.5930 -0.1450	0.0255 -0.1515	0.6583 -0.1470	0.6016 -0.1484
0.4734 -0.1463	0.5971 -0.1445	0.0312 -0.1462	0.6619 -0.1450	0.6062 -0.1461
0.4791 -0.1476	0.6011 -0.1461	0.0365 -0.1475	0.6656 -0.1444	0.6108 -0.1461
0.4828 -0.1452	0.6050 -0.1448	0.4727 -0.1434	0.6698 -0.1477	0.6157 -0.1464
0.4858 -0.1484	0.6086 -0.1433	0.4790 -0.1479	0.6740 -0.1460	0.6199 -0.1464
0.4887 -0.1463	0.6124 -0.1440	0.4849 -0.1457	0.6780 -0.1456	0.6247 -0.1461
0.4916 -0.1454	0.6165 -0.1448	0.4880 -0.1446	0.6821 -0.1460	0.6300 -0.1455
0.4973 -0.1437	0.6206 -0.1426	0.4908 -0.1435	0.9123 -0.1469	0.6356 -0.1464
0.5013 -0.1442	0.6272 -0.1470	0.4937 -0.1457	0.9214 -0.1475	0.6414 -0.1486
0.5042 -0.1453	0.6311 -0.1455	0.4967 -0.1448	0.9305 -0.1458	0.6471 -0.1455
0.5070 -0.1467	0.6350 -0.1440	0.4996 -0.1448	0.9391 -0.1499	0.6527 -0.1447
0.5099 -0.1453	0.6401 -0.1447	0.5049 -0.1443	0.9506 -0.1473	0.6590 -0.1457
0.5128 -0.1450	0.6448 -0.1479	0.5088 -0.1440	0.9591 -0.1441	0.6645 -0.1436
0.5156 -0.1468	0.6504 -0.1470	0.5117 -0.1412	0.9681 -0.1423	0.6701 -0.1454
0.5184 -0.1448	0.6545 -0.1467	0.5147 -0.1435	0.9775 -0.1494	0.6757 -0.1465
0.5214 -0.1437	0.6586 -0.1445	0.5176 -0.1462	0.9869 -0.1490	0.6812 -0.1436
0.5247 -0.1440	0.6626 -0.1434	0.5205 -0.1458	2450001 +	0.6868 -0.1449
0.5289 -0.1470	0.6666 -0.1474	0.5239 -0.1452	0.0007 -0.1467	0.6931 -0.1442
0.5326 -0.1466	0.6711 -0.1469	0.5278 -0.1463	0.4786 -0.1450	2450003 +
0.5361 -0.1472	0.6761 -0.1455	0.5314 -0.1469	0.4856 -0.1453	0.9418 -0.1431
0.5399 -0.1479	0.6845 -0.1428	0.5352 -0.1453	0.4886 -0.1419	0.9474 -0.1427
2449999 +	0.6889 -0.1427	0.5392 -0.1445	0.4914 -0.1420	0.9526 -0.1443
0.4713 -0.1446	0.6930 -0.1447	0.5430 -0.1445	0.4942 -0.1438	0.9580 -0.1436
0.4745 -0.1424	0.6969 -0.1444	0.5513 -0.1467	0.4970 -0.1443	0.9689 -0.1440
0.4773 -0.1421	0.7015 -0.1458	0.5585 -0.1451	0.4999 -0.1446	0.9745 -0.1457
0.4806 -0.1464	0.7057 -0.1463	0.5625 -0.1443	0.5027 -0.1403	0.9856 -0.1430
0.4835 -0.1435	0.7104 -0.1456	0.5662 -0.1446	0.5057 -0.1431	2450004 +
0.4866 -0.1434	0.7144 -0.1440	0.5703 -0.1444	0.5108 -0.1454	0.9313 -0.1460
0.4893 -0.1440	0.9168 -0.1450	0.5761 -0.1441	0.5137 -0.1485	0.9387 -0.1449
0.4924 -0.1446	0.9231 -0.1492	0.5799 -0.1477	0.5170 -0.1465	0.9449 -0.1481
0.4953 -0.1436	0.9357 -0.1469	0.5842 -0.1462	0.5198 -0.1440	0.9506 -0.1465
0.4980 -0.1439	0.9413 -0.1432	0.5895 -0.1476	0.5244 -0.1458	0.9570 -0.1493
0.5007 -0.1438	0.9466 -0.1437	0.5932 -0.1457	0.5304 -0.1450	0.9631 -0.1415

0.9768 -0.1455	0.5497 -0.1440	0.6417 -0.1479	0.5477 -0.1470	0.6417 -0.1461
0.9831 -0.1476	0.5520 -0.1459	0.6439 -0.1466	0.5500 -0.1442	0.6442 -0.1444
0.9902 -0.1502	0.5545 -0.1454	0.6462 -0.1477	0.5524 -0.1443	0.6464 -0.1455
0.9964 -0.1476	0.5568 -0.1477	0.6485 -0.1452	0.5546 -0.1444	0.6488 -0.1449
2450005 +	0.5592 -0.1438	0.6509 -0.1456	0.5570 -0.1463	0.6564 -0.1417
0.0027 -0.1493	0.5618 -0.1436	0.6533 -0.1457	0.5595 -0.1470	0.6591 -0.1447
0.0092 -0.1475	0.5641 -0.1436	0.6556 -0.1468	0.5619 -0.1456	0.6614 -0.1461
0.0154 -0.1508	0.5665 -0.1451	0.6579 -0.1438	0.5642 -0.1440	0.6641 -0.1456
0.0215 -0.1435	0.5688 -0.1455	0.6601 -0.1461	0.5667 -0.1434	0.6666 -0.1464
0.0279 -0.1443	0.5711 -0.1459	0.6624 -0.1440	0.5691 -0.1458	0.6689 -0.1450
0.4780 -0.1429	0.5734 -0.1438	0.6648 -0.1411	0.5713 -0.1455	0.6712 -0.1443
0.4806 -0.1444	0.5759 -0.1446	0.6672 -0.1447	0.5736 -0.1449	0.6816 -0.1423
0.4831 -0.1443	0.5782 -0.1440	0.6696 -0.1458	0.5761 -0.1469	0.6885 -0.1418
0.4854 -0.1442	0.5805 -0.1442	0.6870 -0.1464	0.5786 -0.1465	0.6910 -0.1445
0.4878 -0.1442	0.5828 -0.1452	0.6895 -0.1468	0.5810 -0.1434	0.6936 -0.1466
0.4927 -0.1421	0.5850 -0.1457	0.6929 -0.1459	0.5834 -0.1436	0.6960 -0.1439
0.4951 -0.1447	0.5875 -0.1443	0.6953 -0.1460	0.5856 -0.1454	0.6985 -0.1445
0.4977 -0.1450	0.5899 -0.1471	2450006 +	0.5880 -0.1452	0.7010 -0.1455
0.5000 -0.1446	0.5924 -0.1414	0.4977 -0.1434	0.5904 -0.1447	0.7034 -0.1438
0.5024 -0.1449	0.5946 -0.1439	0.5001 -0.1457	0.5929 -0.1445	2450007 +
0.5048 -0.1431	0.5970 -0.1442	0.5024 -0.1470	0.5953 -0.1436	0.8322 -0.1438
0.5073 -0.1455	0.5993 -0.1443	0.5048 -0.1443	0.5978 -0.1450	0.8522 -0.1489
0.5098 -0.1433	0.6017 -0.1445	0.5072 -0.1444	0.6002 -0.1476	0.8589 -0.1410
0.5121 -0.1472	0.6042 -0.1443	0.5096 -0.1453	0.6026 -0.1442	0.8664 -0.1434
0.5143 -0.1487	0.6068 -0.1454	0.5120 -0.1473	0.6049 -0.1430	0.8886 -0.1446
0.5167 -0.1469	0.6093 -0.1457	0.5143 -0.1445	0.6072 -0.1464	0.8955 -0.1437
0.5190 -0.1455	0.6116 -0.1455	0.5167 -0.1456	0.6096 -0.1471	0.9028 -0.1462
0.5213 -0.1481	0.6141 -0.1451	0.5192 -0.1451	0.6120 -0.1437	0.9124 -0.1475
0.5235 -0.1459	0.6165 -0.1448	0.5215 -0.1473	0.6145 -0.1429	0.9194 -0.1479
0.5259 -0.1458	0.6187 -0.1450	0.5239 -0.1444	0.6171 -0.1461	0.9262 -0.1431
0.5282 -0.1444	0.6210 -0.1450	0.5263 -0.1452	0.6195 -0.1467	0.9336 -0.1441
0.5304 -0.1436	0.6233 -0.1472	0.5287 -0.1467	0.6217 -0.1463	0.9402 -0.1481
0.5325 -0.1451	0.6257 -0.1447	0.5312 -0.1457	0.6242 -0.1433	0.9476 -0.1491
0.5350 -0.1444	0.6280 -0.1460	0.5335 -0.1474	0.6267 -0.1438	0.9542 -0.1457
0.5374 -0.1466	0.6305 -0.1438	0.5357 -0.1433	0.6292 -0.1453	0.9681 -0.1446
0.5398 -0.1456	0.6328 -0.1465	0.5382 -0.1444	0.6317 -0.1479	0.9746 -0.1459
0.5422 -0.1456	0.6352 -0.1451	0.5405 -0.1460	0.6342 -0.1445	0.9810 -0.1460
0.5449 -0.1459	0.6374 -0.1448	0.5429 -0.1455	0.6368 -0.1450	
0.5473 -0.1472	0.6396 -0.1435	0.5453 -0.1430	0.6393 -0.1464	

Table 33. Strömgren m_1 observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

HR 1430 - HR	0.4979 +0.0238	0.5092 +0.0254	0.5200 +0.0241	0.5317 +0.0259
1358	0.5001 +0.0242	0.5124 +0.0239	0.5223 +0.0216	0.5355 +0.0236
m_1 index	0.5025 +0.0255	0.5153 +0.0290	0.5251 +0.0256	0.5392 +0.0256
2449994 +	0.5057 +0.0245	0.5178 +0.0258	0.5292 +0.0271	0.5422 +0.0246

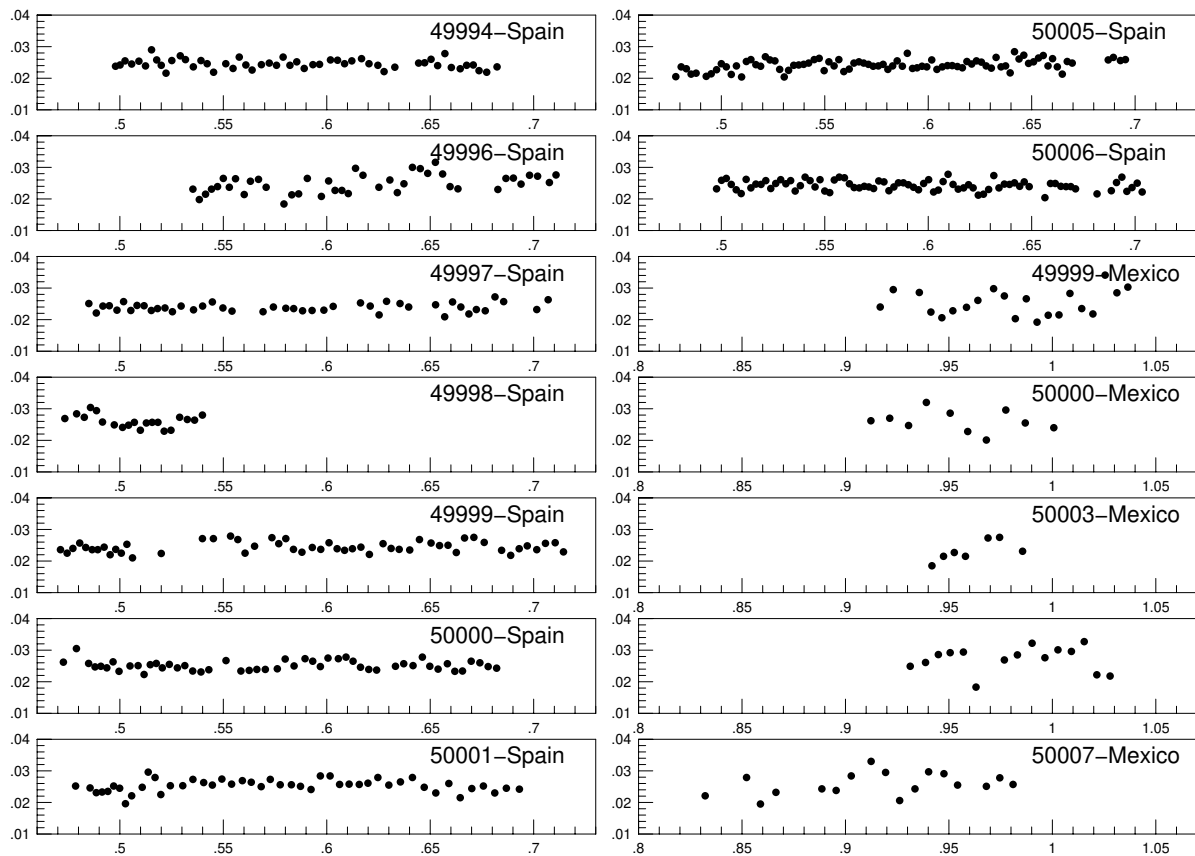


Figure 32: Strömgren m_1 observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995).

0.5453 +0.0219	0.6121 +0.0255	2449996 +	0.6009 +0.0257	0.6866 +0.0265
0.5512 +0.0246	0.6168 +0.0262	0.5353 +0.0231	0.6040 +0.0227	0.6902 +0.0266
0.5547 +0.0231	0.6204 +0.0246	0.5384 +0.0198	0.6073 +0.0227	0.6939 +0.0247
0.5577 +0.0267	0.6247 +0.0241	0.5414 +0.0215	0.6104 +0.0217	0.6980 +0.0275
0.5609 +0.0242	0.6277 +0.0221	0.5443 +0.0231	0.6139 +0.0297	0.7019 +0.0272
0.5639 +0.0226	0.6329 +0.0235	0.5472 +0.0239	0.6175 +0.0275	0.7076 +0.0252
0.5684 +0.0243	0.6444 +0.0248	0.5500 +0.0265	0.6252 +0.0237	0.7108 +0.0276
0.5722 +0.0248	0.6473 +0.0249	0.5529 +0.0237	0.6305 +0.0260	2449997 +
0.5757 +0.0241	0.6504 +0.0260	0.5559 +0.0264	0.6341 +0.0220	0.4850 +0.0251
0.5789 +0.0267	0.6536 +0.0240	0.5601 +0.0214	0.6373 +0.0248	0.4886 +0.0221
0.5822 +0.0241	0.6571 +0.0278	0.5631 +0.0256	0.6414 +0.0300	0.4918 +0.0243
0.5855 +0.0252	0.6602 +0.0234	0.5670 +0.0262	0.6452 +0.0296	0.4949 +0.0244
0.5891 +0.0231	0.6645 +0.0230	0.5707 +0.0237	0.6488 +0.0281	0.4986 +0.0230
0.5933 +0.0243	0.6676 +0.0241	0.5793 +0.0184	0.6525 +0.0316	0.5018 +0.0257
0.5965 +0.0244	0.6708 +0.0242	0.5831 +0.0213	0.6560 +0.0279	0.5053 +0.0229
0.6018 +0.0258	0.6736 +0.0224	0.5864 +0.0216	0.6596 +0.0239	0.5083 +0.0245
0.6052 +0.0257	0.6773 +0.0219	0.5906 +0.0265	0.6634 +0.0232	0.5117 +0.0244
0.6086 +0.0246	0.6823 +0.0236	0.5974 +0.0208	0.6827 +0.0230	0.5152 +0.0229

0.5182 +0.0235	0.5156 +0.0257	0.6504 +0.0257	0.5117 +0.0223	0.9681 +0.0201
0.5218 +0.0237	0.5184 +0.0257	0.6545 +0.0249	0.5147 +0.0254	0.9775 +0.0296
0.5254 +0.0225	0.5214 +0.0229	0.6586 +0.0250	0.5176 +0.0258	0.9869 +0.0255
0.5296 +0.0243	0.5247 +0.0232	0.6626 +0.0227	0.5205 +0.0244	2450001 +
0.5356 +0.0231	0.5289 +0.0273	0.6666 +0.0273	0.5239 +0.0255	0.0007 +0.0240
0.5400 +0.0243	0.5326 +0.0266	0.6711 +0.0275	0.5278 +0.0244	0.4786 +0.0252
0.5447 +0.0256	0.5361 +0.0264	0.6761 +0.0259	0.5314 +0.0251	0.4856 +0.0246
0.5498 +0.0237	0.5399 +0.0280	0.6845 +0.0234	0.5352 +0.0234	0.4886 +0.0231
0.5542 +0.0227	2449999 +	0.6889 +0.0218	0.5392 +0.0231	0.4914 +0.0233
0.5692 +0.0225	0.4713 +0.0236	0.6930 +0.0239	0.5430 +0.0238	0.4942 +0.0235
0.5742 +0.0240	0.4745 +0.0225	0.6969 +0.0248	0.5513 +0.0267	0.4970 +0.0252
0.5802 +0.0236	0.4773 +0.0240	0.7015 +0.0236	0.5585 +0.0234	0.4999 +0.0245
0.5840 +0.0235	0.4806 +0.0257	0.7057 +0.0256	0.5625 +0.0236	0.5027 +0.0196
0.5883 +0.0228	0.4835 +0.0243	0.7104 +0.0258	0.5662 +0.0239	0.5057 +0.0221
0.5929 +0.0229	0.4866 +0.0236	0.7144 +0.0229	0.5703 +0.0239	0.5108 +0.0248
0.5986 +0.0230	0.4893 +0.0236	0.9168 +0.0240	0.5761 +0.0241	0.5137 +0.0296
0.6031 +0.0242	0.4924 +0.0244	0.9231 +0.0295	0.5799 +0.0272	0.5170 +0.0279
0.6163 +0.0253	0.4953 +0.0220	0.9357 +0.0286	0.5842 +0.0250	0.5198 +0.0225
0.6210 +0.0243	0.4980 +0.0237	0.9413 +0.0224	0.5895 +0.0273	0.5244 +0.0253
0.6253 +0.0215	0.5007 +0.0225	0.9466 +0.0206	0.5932 +0.0265	0.5304 +0.0253
0.6289 +0.0258	0.5034 +0.0253	0.9519 +0.0228	0.5969 +0.0248	0.5353 +0.0273
0.6354 +0.0251	0.5061 +0.0210	0.9585 +0.0239	0.6006 +0.0275	0.5405 +0.0263
0.6396 +0.0240	0.5200 +0.0224	0.9640 +0.0261	0.6056 +0.0273	0.5447 +0.0255
0.6526 +0.0247	0.5399 +0.0271	0.9716 +0.0298	0.6093 +0.0278	0.5493 +0.0274
0.6570 +0.0209	0.5452 +0.0271	0.9768 +0.0275	0.6127 +0.0265	0.5540 +0.0258
0.6608 +0.0256	0.5535 +0.0279	0.9821 +0.0203	0.6163 +0.0246	0.5592 +0.0269
0.6648 +0.0240	0.5570 +0.0268	0.9874 +0.0266	0.6203 +0.0239	0.5635 +0.0264
0.6687 +0.0218	0.5605 +0.0225	0.9926 +0.0192	0.6241 +0.0237	0.5683 +0.0250
0.6723 +0.0232	0.5651 +0.0247	0.9980 +0.0214	0.6332 +0.0249	0.5727 +0.0273
0.6766 +0.0228	0.5735 +0.0274	2450000 +	0.6372 +0.0257	0.5775 +0.0256
0.6813 +0.0272	0.5768 +0.0255	0.0032 +0.0215	0.6417 +0.0251	0.5829 +0.0256
0.6855 +0.0257	0.5802 +0.0271	0.0085 +0.0283	0.6462 +0.0278	0.5873 +0.0251
0.7015 +0.0232	0.5839 +0.0237	0.0142 +0.0235	0.6498 +0.0249	0.5924 +0.0241
0.7070 +0.0263	0.5880 +0.0228	0.0196 +0.0218	0.6538 +0.0240	0.5969 +0.0284
2449998 +	0.5930 +0.0243	0.0255 +0.0341	0.6583 +0.0257	0.6016 +0.0284
0.4734 +0.0269	0.5971 +0.0237	0.0312 +0.0285	0.6619 +0.0233	0.6062 +0.0257
0.4791 +0.0284	0.6011 +0.0258	0.0365 +0.0303	0.6656 +0.0234	0.6108 +0.0258
0.4828 +0.0273	0.6050 +0.0239	0.4727 +0.0262	0.6698 +0.0265	0.6157 +0.0257
0.4858 +0.0304	0.6086 +0.0234	0.4790 +0.0305	0.6740 +0.0260	0.6199 +0.0261
0.4887 +0.0294	0.6124 +0.0239	0.4849 +0.0258	0.6780 +0.0248	0.6247 +0.0279
0.4916 +0.0258	0.6165 +0.0244	0.4880 +0.0247	0.6821 +0.0243	0.6300 +0.0255
0.4973 +0.0249	0.6206 +0.0221	0.4908 +0.0249	0.9123 +0.0262	0.6356 +0.0265
0.5013 +0.0241	0.6272 +0.0255	0.4937 +0.0244	0.9214 +0.0270	0.6414 +0.0279
0.5042 +0.0248	0.6311 +0.0240	0.4967 +0.0263	0.9305 +0.0247	0.6471 +0.0248
0.5070 +0.0257	0.6350 +0.0237	0.4996 +0.0233	0.9391 +0.0320	0.6527 +0.0230
0.5099 +0.0232	0.6401 +0.0235	0.5049 +0.0250	0.9506 +0.0286	0.6590 +0.0260
0.5128 +0.0255	0.6448 +0.0268	0.5088 +0.0251	0.9591 +0.0228	0.6645 +0.0215

0.6701 +0.0244	0.5121 +0.0253	0.6141 +0.0237	0.5287 +0.0261	0.6317 +0.0274
0.6757 +0.0252	0.5143 +0.0259	0.6165 +0.0233	0.5312 +0.0248	0.6342 +0.0235
0.6812 +0.0230	0.5167 +0.0243	0.6187 +0.0253	0.5335 +0.0258	0.6368 +0.0247
0.6868 +0.0245	0.5190 +0.0238	0.6210 +0.0245	0.5357 +0.0225	0.6393 +0.0246
0.6931 +0.0242	0.5213 +0.0268	0.6233 +0.0255	0.5382 +0.0242	0.6417 +0.0251
2450003 +	0.5235 +0.0258	0.6257 +0.0251	0.5405 +0.0269	0.6442 +0.0240
0.9418 +0.0185	0.5259 +0.0255	0.6280 +0.0239	0.5429 +0.0258	0.6464 +0.0254
0.9474 +0.0215	0.5282 +0.0228	0.6305 +0.0232	0.5453 +0.0238	0.6488 +0.0239
0.9526 +0.0227	0.5304 +0.0204	0.6328 +0.0266	0.5477 +0.0261	0.6564 +0.0204
0.9580 +0.0215	0.5325 +0.0225	0.6352 +0.0236	0.5500 +0.0225	0.6591 +0.0249
0.9689 +0.0273	0.5350 +0.0241	0.6374 +0.0239	0.5524 +0.0220	0.6614 +0.0249
0.9745 +0.0275	0.5374 +0.0242	0.6396 +0.0217	0.5546 +0.0260	0.6641 +0.0240
0.9856 +0.0231	0.5398 +0.0244	0.6417 +0.0284	0.5570 +0.0269	0.6666 +0.0239
2450004 +	0.5422 +0.0248	0.6439 +0.0261	0.5595 +0.0267	0.6689 +0.0239
0.9313 +0.0249	0.5449 +0.0259	0.6462 +0.0273	0.5619 +0.0248	0.6712 +0.0232
0.9387 +0.0261	0.5473 +0.0263	0.6485 +0.0247	0.5642 +0.0236	0.6816 +0.0216
0.9449 +0.0286	0.5497 +0.0224	0.6509 +0.0252	0.5667 +0.0235	0.6885 +0.0226
0.9506 +0.0292	0.5520 +0.0252	0.6533 +0.0264	0.5691 +0.0240	0.6910 +0.0252
0.9570 +0.0294	0.5545 +0.0239	0.6556 +0.0272	0.5713 +0.0238	0.6936 +0.0269
0.9631 +0.0183	0.5568 +0.0259	0.6579 +0.0239	0.5736 +0.0233	0.6960 +0.0224
0.9768 +0.0269	0.5592 +0.0221	0.6601 +0.0262	0.5761 +0.0257	0.6985 +0.0236
0.9831 +0.0285	0.5618 +0.0229	0.6624 +0.0236	0.5786 +0.0254	0.7010 +0.0250
0.9902 +0.0322	0.5641 +0.0248	0.6648 +0.0213	0.5810 +0.0226	0.7034 +0.0222
0.9964 +0.0276	0.5665 +0.0252	0.6672 +0.0253	0.5834 +0.0238	2450007 +
2450005 +	0.5688 +0.0248	0.6696 +0.0248	0.5856 +0.0251	0.8322 +0.0221
0.0027 +0.0301	0.5711 +0.0244	0.6870 +0.0258	0.5880 +0.0251	0.8522 +0.0279
0.0092 +0.0296	0.5734 +0.0238	0.6895 +0.0266	0.5904 +0.0245	0.8589 +0.0195
0.0154 +0.0327	0.5759 +0.0239	0.6929 +0.0256	0.5929 +0.0237	0.8664 +0.0232
0.0215 +0.0222	0.5782 +0.0244	0.6953 +0.0259	0.5953 +0.0229	0.8886 +0.0243
0.0279 +0.0218	0.5805 +0.0228	2450006 +	0.5978 +0.0249	0.8955 +0.0238
0.4780 +0.0205	0.5828 +0.0239	0.4977 +0.0232	0.6002 +0.0261	0.9028 +0.0284
0.4806 +0.0236	0.5850 +0.0255	0.5001 +0.0259	0.6026 +0.0222	0.9124 +0.0330
0.4831 +0.0230	0.5875 +0.0238	0.5024 +0.0265	0.6049 +0.0228	0.9194 +0.0295
0.4854 +0.0213	0.5899 +0.0279	0.5048 +0.0246	0.6072 +0.0255	0.9262 +0.0206
0.4878 +0.0216	0.5924 +0.0231	0.5072 +0.0229	0.6096 +0.0278	0.9336 +0.0243
0.4927 +0.0206	0.5946 +0.0233	0.5096 +0.0217	0.6120 +0.0246	0.9402 +0.0297
0.4951 +0.0214	0.5970 +0.0238	0.5120 +0.0262	0.6145 +0.0231	0.9476 +0.0291
0.4977 +0.0227	0.5993 +0.0236	0.5143 +0.0235	0.6171 +0.0235	0.9542 +0.0255
0.5000 +0.0246	0.6017 +0.0258	0.5167 +0.0247	0.6195 +0.0245	0.9681 +0.0251
0.5024 +0.0236	0.6042 +0.0228	0.5192 +0.0246	0.6217 +0.0235	0.9746 +0.0278
0.5048 +0.0212	0.6068 +0.0236	0.5215 +0.0258	0.6242 +0.0212	0.9810 +0.0257
0.5073 +0.0239	0.6093 +0.0240	0.5239 +0.0233	0.6267 +0.0215	
0.5098 +0.0204	0.6116 +0.0240	0.5263 +0.0249	0.6292 +0.0230	

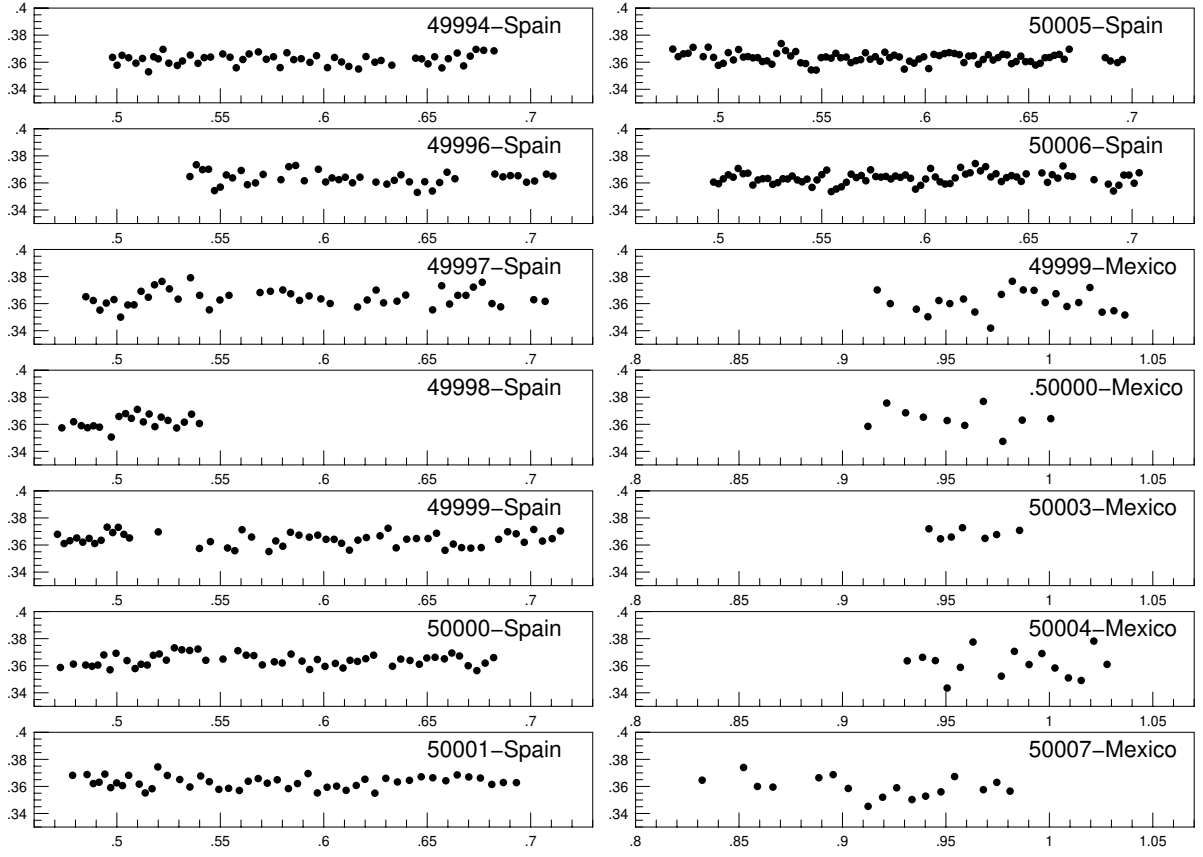


Figure 33: Strömgren c_1 observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995).

Table 34. Strömgren c_1 observations of HR 1430 – HR 1358 by E. Rodríguez, M. Paparó and A. Rolland in Spain and S. F. Gonzalez-Bedolla in Mexico (1995)

HR 1430 - HR	0.5292 +0.3576	0.5822 +0.3670	0.6473 +0.3625	0.5443 +0.3701
1358	0.5317 +0.3609	0.5855 +0.3619	0.6504 +0.3588	0.5472 +0.3543
c_1 index	0.5355 +0.3653	0.5891 +0.3626	0.6536 +0.3640	0.5500 +0.3569
2449994 +	0.5392 +0.3592	0.5933 +0.3599	0.6571 +0.3558	0.5529 +0.3659
0.4979 +0.3636	0.5422 +0.3634	0.5965 +0.3648	0.6602 +0.3626	0.5559 +0.3637
0.5001 +0.3578	0.5453 +0.3638	0.6018 +0.3560	0.6645 +0.3668	0.5601 +0.3692
0.5025 +0.3651	0.5512 +0.3661	0.6052 +0.3635	0.6676 +0.3573	0.5631 +0.3587
0.5057 +0.3633	0.5547 +0.3637	0.6086 +0.3602	0.6708 +0.3645	0.5670 +0.3600
0.5092 +0.3593	0.5577 +0.3559	0.6121 +0.3569	0.6736 +0.3695	0.5707 +0.3663
0.5124 +0.3628	0.5609 +0.3620	0.6168 +0.3550	0.6773 +0.3688	0.5793 +0.3624
0.5153 +0.3529	0.5639 +0.3661	0.6204 +0.3642	0.6823 +0.3684	0.5831 +0.3720
0.5178 +0.3640	0.5684 +0.3676	0.6247 +0.3600	2449996 +	0.5864 +0.3729
0.5200 +0.3625	0.5722 +0.3622	0.6277 +0.3613	0.5353 +0.3647	0.5906 +0.3616
0.5223 +0.3695	0.5757 +0.3640	0.6329 +0.3578	0.5384 +0.3734	0.5974 +0.3701
0.5251 +0.3593	0.5789 +0.3560	0.6444 +0.3630	0.5414 +0.3698	0.6009 +0.3607

0.6040 +0.3637	0.5840 +0.3673	0.4806 +0.3652	0.7057 +0.3629	0.5625 +0.3678
0.6073 +0.3624	0.5883 +0.3624	0.4835 +0.3621	0.7104 +0.3647	0.5662 +0.3675
0.6104 +0.3642	0.5929 +0.3657	0.4866 +0.3649	0.7144 +0.3704	0.5703 +0.3606
0.6139 +0.3601	0.5986 +0.3635	0.4893 +0.3611	0.9168 +0.3701	0.5761 +0.3629
0.6175 +0.3642	0.6031 +0.3601	0.4924 +0.3635	0.9231 +0.3600	0.5799 +0.3620
0.6252 +0.3606	0.6163 +0.3575	0.4953 +0.3732	0.9357 +0.3559	0.5842 +0.3686
0.6305 +0.3591	0.6210 +0.3627	0.4980 +0.3692	0.9413 +0.3503	0.5895 +0.3634
0.6341 +0.3619	0.6253 +0.3700	0.5007 +0.3731	0.9466 +0.3623	0.5932 +0.3572
0.6373 +0.3660	0.6289 +0.3606	0.5034 +0.3679	0.9519 +0.3600	0.5969 +0.3646
0.6414 +0.3608	0.6354 +0.3618	0.5061 +0.3652	0.9585 +0.3634	0.6006 +0.3595
0.6452 +0.3530	0.6396 +0.3663	0.5200 +0.3697	0.9640 +0.3538	0.6056 +0.3617
0.6488 +0.3609	0.6526 +0.3554	0.5399 +0.3575	0.9716 +0.3419	0.6093 +0.3583
0.6525 +0.3540	0.6570 +0.3732	0.5452 +0.3625	0.9768 +0.3668	0.6127 +0.3640
0.6560 +0.3603	0.6608 +0.3597	0.5535 +0.3578	0.9821 +0.3765	0.6163 +0.3632
0.6596 +0.3679	0.6648 +0.3661	0.5570 +0.3558	0.9874 +0.3701	0.6203 +0.3652
0.6634 +0.3631	0.6687 +0.3661	0.5605 +0.3713	0.9926 +0.3698	0.6241 +0.3678
0.6827 +0.3666	0.6723 +0.3722	0.5651 +0.3659	0.9980 +0.3608	0.6332 +0.3596
0.6866 +0.3645	0.6766 +0.3758	0.5735 +0.3552	2450000 +	0.6372 +0.3649
0.6902 +0.3654	0.6813 +0.3600	0.5768 +0.3630	0.0032 +0.3673	0.6417 +0.3639
0.6939 +0.3653	0.6855 +0.3576	0.5802 +0.3591	0.0085 +0.3579	0.6462 +0.3611
0.6980 +0.3605	0.7015 +0.3629	0.5839 +0.3694	0.0142 +0.3608	0.6498 +0.3657
0.7019 +0.3614	0.7070 +0.3617	0.5880 +0.3673	0.0196 +0.3719	0.6538 +0.3662
0.7076 +0.3665	2449998 +	0.5930 +0.3658	0.0255 +0.3537	0.6583 +0.3651
0.7108 +0.3651	0.4734 +0.3574	0.5971 +0.3673	0.0312 +0.3547	0.6619 +0.3694
2449997 +	0.4791 +0.3619	0.6011 +0.3642	0.0365 +0.3516	0.6656 +0.3672
0.4850 +0.3651	0.4828 +0.3590	0.6050 +0.3642	0.4727 +0.3587	0.6698 +0.3600
0.4886 +0.3623	0.4858 +0.3575	0.6086 +0.3613	0.4790 +0.3612	0.6740 +0.3564
0.4918 +0.3552	0.4887 +0.3589	0.6124 +0.3562	0.4849 +0.3605	0.6780 +0.3619
0.4949 +0.3604	0.4916 +0.3579	0.6165 +0.3636	0.4880 +0.3596	0.6821 +0.3660
0.4986 +0.3630	0.4973 +0.3506	0.6206 +0.3655	0.4908 +0.3605	0.9123 +0.3585
0.5018 +0.3500	0.501 +0.3658	0.6272 +0.3668	0.4937 +0.3680	0.9214 +0.3757
0.5053 +0.3590	0.5042 +0.3679	0.6311 +0.3724	0.4967 +0.3570	0.9305 +0.3685
0.5083 +0.3591	0.5070 +0.3644	0.6350 +0.3579	0.4996 +0.3692	0.9391 +0.3653
0.5117 +0.3691	0.5099 +0.3710	0.6401 +0.3643	0.5049 +0.3638	0.9506 +0.3628
0.5152 +0.3647	0.5128 +0.3618	0.6448 +0.3648	0.5088 +0.3579	0.9591 +0.3592
0.5182 +0.3739	0.5156 +0.3676	0.6504 +0.3648	0.5117 +0.3611	0.9681 +0.3769
0.5218 +0.3764	0.5184 +0.3583	0.6545 +0.3687	0.5147 +0.3605	0.9775 +0.3474
0.5254 +0.3709	0.5214 +0.3653	0.6586 +0.3561	0.5176 +0.3677	0.9869 +0.3631
0.5296 +0.3633	0.5247 +0.3629	0.6626 +0.3607	0.5205 +0.3687	2450001 +
0.5356 +0.3791	0.5289 +0.3573	0.6666 +0.3581	0.5239 +0.3641	0.0007 +0.3642
0.5400 +0.3661	0.5326 +0.3616	0.6711 +0.3577	0.5278 +0.3732	0.4786 +0.3682
0.5447 +0.3554	0.5361 +0.3675	0.6761 +0.3581	0.5314 +0.3718	0.4856 +0.3688
0.5498 +0.3627	0.5399 +0.3606	0.6845 +0.3642	0.5352 +0.3713	0.4886 +0.3621
0.5542 +0.3661	2449999 +	0.6889 +0.3698	0.5392 +0.3723	0.4914 +0.3631
0.5692 +0.3682	0.4713 +0.3679	0.6930 +0.3683	0.5430 +0.3640	0.4942 +0.3691
0.5742 +0.3691	0.4745 +0.3611	0.6969 +0.3620	0.5513 +0.3649	0.4970 +0.3591
0.5802 +0.3701	0.4773 +0.3632	0.7015 +0.3715	0.5585 +0.3711	0.4999 +0.3626

0.5027 +0.3606	0.9856 +0.3708	0.5497 +0.3634	0.6601 +0.3635	0.5856 +0.3651
0.5057 +0.3682	2450004 +	0.5520 +0.3639	0.6624 +0.3651	0.5880 +0.3641
0.5108 +0.3617	0.9313 +0.3636	0.5545 +0.3630	0.6648 +0.3658	0.5904 +0.3659
0.5137 +0.3552	0.9387 +0.3662	0.5568 +0.3666	0.6672 +0.3622	0.5929 +0.3634
0.5170 +0.3583	0.9449 +0.3638	0.5592 +0.3633	0.6696 +0.3696	0.5953 +0.3554
0.5198 +0.3744	0.9506 +0.3435	0.5618 +0.3638	0.6870 +0.3634	0.5978 +0.3582
0.5244 +0.3681	0.9570 +0.3588	0.5641 +0.3597	0.6895 +0.3609	0.6002 +0.3629
0.5304 +0.3651	0.9631 +0.3775	0.5665 +0.3611	0.6929 +0.3597	0.6026 +0.3707
0.5353 +0.3596	0.9768 +0.3523	0.5688 +0.3619	0.6953 +0.3620	0.6049 +0.3644
0.5405 +0.3677	0.9831 +0.3706	0.5711 +0.3670	2450006 +	0.6072 +0.3608
0.5447 +0.3635	0.9902 +0.3609	0.5734 +0.3622	0.4977 +0.3606	0.6096 +0.3592
0.5493 +0.3578	0.9964 +0.3690	0.5759 +0.3641	0.5001 +0.3594	0.6120 +0.3595
0.5540 +0.3586	2450005 +	0.5782 +0.3607	0.5024 +0.3630	0.6145 +0.3637
0.5592 +0.3570	0.0027 +0.3583	0.5805 +0.3674	0.5048 +0.3660	0.6171 +0.3715
0.5635 +0.3638	0.0092 +0.3510	0.5828 +0.3634	0.5072 +0.3642	0.6195 +0.3665
0.5683 +0.3658	0.0154 +0.3491	0.5850 +0.3652	0.5096 +0.3707	0.6217 +0.3675
0.5727 +0.3624	0.0215 +0.3782	0.5875 +0.3639	0.5120 +0.3668	0.6242 +0.3743
0.5775 +0.3649	0.0279 +0.3610	0.5899 +0.3549	0.5143 +0.3672	0.6267 +0.3689
0.5829 +0.3584	0.4780 +0.3697	0.5924 +0.3608	0.5167 +0.3584	0.6292 +0.3720
0.5873 +0.3621	0.4806 +0.3641	0.5946 +0.3593	0.5192 +0.3622	0.6317 +0.3644
0.5924 +0.3695	0.4831 +0.3662	0.5970 +0.3624	0.5215 +0.3631	0.6342 +0.3668
0.5969 +0.3552	0.4854 +0.3666	0.5993 +0.3640	0.5239 +0.3633	0.6368 +0.3610
0.6016 +0.3594	0.4878 +0.3710	0.6017 +0.3553	0.5263 +0.3589	0.6393 +0.3639
0.6062 +0.3602	0.4927 +0.3641	0.6042 +0.3658	0.5287 +0.3602	0.6417 +0.3654
0.6108 +0.3571	0.4951 +0.3711	0.6068 +0.3649	0.5312 +0.3631	0.6442 +0.3644
0.6157 +0.3607	0.4977 +0.3636	0.6093 +0.3664	0.5335 +0.3629	0.6464 +0.3611
0.6199 +0.3653	0.5000 +0.3577	0.6116 +0.3671	0.5357 +0.3651	0.6488 +0.3667
0.6247 +0.3550	0.5024 +0.3592	0.6141 +0.3665	0.5382 +0.3622	0.6564 +0.3674
0.6300 +0.3660	0.5048 +0.3671	0.6165 +0.3656	0.5405 +0.3608	0.6591 +0.3604
0.6356 +0.3633	0.5073 +0.3617	0.6187 +0.3597	0.5429 +0.3628	0.6614 +0.3661
0.6414 +0.3645	0.5098 +0.3694	0.6210 +0.3645	0.5453 +0.3567	0.6641 +0.3635
0.6471 +0.3671	0.5121 +0.3638	0.6233 +0.3648	0.5477 +0.3622	0.6666 +0.3725
0.6527 +0.3664	0.5143 +0.3642	0.6257 +0.3585	0.5500 +0.3661	0.6689 +0.3653
0.6590 +0.3642	0.5167 +0.3632	0.6280 +0.3620	0.5524 +0.3695	0.6712 +0.3648
0.6645 +0.3685	0.5190 +0.3634	0.6305 +0.3655	0.5546 +0.3536	0.6816 +0.3624
0.6701 +0.3670	0.5213 +0.3605	0.6328 +0.3616	0.5570 +0.3555	0.6885 +0.3591
0.6757 +0.3662	0.5235 +0.3610	0.6352 +0.3634	0.5595 +0.3571	0.6910 +0.3540
0.6812 +0.3615	0.5259 +0.3585	0.6374 +0.3659	0.5619 +0.3605	0.6936 +0.3583
0.6868 +0.3629	0.5282 +0.3665	0.6396 +0.3654	0.5642 +0.3665	0.6960 +0.3658
0.6931 +0.3628	0.5304 +0.3738	0.6417 +0.3589	0.5667 +0.3639	0.6985 +0.3658
2450003 +	0.5325 +0.3686	0.6439 +0.3605	0.5691 +0.3655	0.7010 +0.3598
0.9418 +0.3720	0.5350 +0.3646	0.6462 +0.3645	0.5713 +0.3616	0.7034 +0.3675
0.9474 +0.3646	0.5374 +0.3679	0.6485 +0.3604	0.5736 +0.3697	2450007 +
0.9526 +0.3659	0.5398 +0.3596	0.6509 +0.3606	0.5761 +0.3647	0.8322 +0.3646
0.9580 +0.3728	0.5422 +0.3590	0.6533 +0.3579	0.5786 +0.3643	0.8522 +0.3740
0.9689 +0.3649	0.5449 +0.3543	0.6556 +0.3592	0.5810 +0.3648	0.8589 +0.3600
0.9745 +0.3677	0.5473 +0.3542	0.6579 +0.3633	0.5834 +0.3629	0.8664 +0.3595

0.8886 +0.3664	0.9124 +0.3453	0.9336 +0.3503	0.9542 +0.3673	0.9810 +0.3565
0.8955 +0.3687	0.9194 +0.3520	0.9402 +0.3528	0.9681 +0.3576	
0.9028 +0.3585	0.9262 +0.3590	0.9476 +0.3560	0.9746 +0.3630	

Inspired by communication before the publication of Paparó et al. (2000) paper, a spectroscopic observation was obtained by A. B. Kaye (Los Alamos) at Kitt Peak and published in IBVS (Kaye 1999). The preliminary orbital elements of 57 Tau are given. The huge, long timebase observation for the spectroscopic binary and the spectroscopic information create a stabil base for the additional investigation with the new space observations, either for photometric (Kepler, TESS) or for stellar parameters (Gaia). It is definitely a good base for stability investigations. Unusual single cycles were identified in the Paparó et al. (2000) paper. It would be possible to check whether more unusual single cycles could be identified in the new space data. Are they regularly repeated and how often they appear? Could it be connected to the binary structure?

The archived files are: 57tau.arch - Strömgren *b* observations by McNamara (Table 17) and transformed to *y* colour, Johnson *V* observations by Paparó in 1986/1987 (Table 18), Johnson *V* observations by Paparó and Kolláth in 1989 (Table 19), Johnson *V* observations by Jiang Shi-yang and Li Zhi-ping in 1989 (Table 20), Strömgren *b* observations in 1995 by Rodriguez, Paparó, Rolland in Spain and Gonzalez-Bedolla in Mexico (Table 21), Strömgren *y* in 1995 (Table 22), *u* colour in 1995 (Table 23), *v* colour in 1995 (Table 24), *b-y* colour index in 1995 (Table 25), m_1 values in 1995 (Table 26), c_1 in 1995 (Table 27).

The data on comparison stars are given in HR1430-HR1358.arch - Strömgren *b* observations in Spain and Mexico in 1995 (Table 28), *y* colour in 1995 (Table 29), *u* colour in 1995 (Table 30), *v* colour in 1995 (Table 31), *b-y* colour index in 1995 (Table 32), m_1 values in 1995 (Table 33), c_1 values in 1995 (Table 34).

VW Ari

Another challenging target was selected in the Hungarian low-amplitude δ Scuti project. VW Ari = HD 15165 is a variable member of a binary system. The metal content is different for the two members, so VW Ari was widely observed and investigated in the 1970s by McMillan et al, (1976), Rucinski (1978) and Percy (1980). The papers and the data were published, so I only mention them for the sake of completeness. Observations of VW Ari were continued in the eighties, too. B. J. McNamara and S. J. Horan obtained data in Strömgren *b* colour over 1982-83 season at New Mexico State University and published in McNamara & Horan (1984). The paper contains the analyses of the data, but the data, itself, were not included, only the dates of the observations were given. Since the data were available upon request, I got it from B. J. McNamara when I became interested in the investigation of VW Ari.

Another dataset of B. J. McNamara existed, which was observed in the 1983/84 season over seven nights. These observations were not included into any analyses and was not published anywhere, but B. J. McNamara was so generous to send these data to me, too. Now, I got the permission of his family member through Joyce Guzik (Los Alamos) to include it into this paper for preserving the remarkable effort for the astronomical community.

Table 35. Journal of the observations on VW Ari

Date	HJD 2400000+	Length day	No. of obs.	Remark
Sept.23 1982	45235	0.2283	137	BMcN, b
Sept.27 1982	45239	0.2583	155	BMcN, b
Oct.3 1982	45245	0.2612	125	BMcN, b
Oct.4 1982	45246	0.0628	30	BMcN, b
Oct.8 1982	45250	0.2402	113	BMcN, b
Oct.9 1982	45251	0.2409	109	BMcN, b
Oct.10 1982	45352	0.2604	140	BMcN, b
Oct.12 1982	45254	0.1902	80	BMcN, b
Oct.14 1982	45256	0.2416	97	BMcN, b
Oct.28 1982	45270	0.1914	85	BMcN, b
Nov.12 1982	45285	0.2281	140	BMcN, b
Dec.14 1982	45317	0.1333	72	BMcN, b
Dec.15 1982	45318	0.2217	121	BMcN, b
Dec.17 1982	45320	0.1833	74	BMcN, b
Dec.20 1982	45323	0.2284	111	BMcN, b
Jan.11 1983	45345	0.1248	56	BMcN, b
1982/1983 all		3.2949	1645	
Oct.31 1983	45639	0.0789	39	BMcN, b
Nov.07 1983	45646	0.2850	199	BMcN, b
Nov.13 1983	45652	0.2411	78	BMcN, b
Nov.14 1983	45653	0.2789	186	BMcN, b
Nov.15 1983	45654	0.1050	58	BMcN, b
Nov.28 1983	45667	0.3085	166	BMcN, b
Jan.05 1984	45705	0.2121	113	BMcN, b
1983/1984 all		1.5095	839	
Oct.20/21 1987	47089	0.1122	38	Hun, V
Oct.27/28 1987	47096	0.0880	32	Hun, V
Oct.16/17 1987	47085	0.1222	50	Mex, V
Oct.17/18 1987	47086	0.2541	52	Mex, V
Oct.18/19 1987	47087	0.0973	24	Mex, V
Oct.19/20 1987	47088	0.1507	37	Mex, V
Nov.21/22 1987	47121	0.2140	45	Span, u,b,v,y,b-y,c1,m1
Nov.27/28 1987	47127	0.1292	33	Span, u,b,v,y,b-y,c1,m1
Nov.28/29 1987	47128	0.1348	35	Span, u,b,v,y,b-y,c1,m1
Oct.18/19 1987	47087	0.2802	95	China, V
Oct.19/20 1987	47088	0.3266	106	China, V
Oct.22/23 1987	47091	0.1297	49	China, V
Oct.23/24 1987	47092	0.2705	100	China, V
1987 all		2.3095	696	

Table 35. cont. Journal of the observations on VW Ari

Date	HJD 2400000+	Length day	No. of obs.	Remark
Nov.7/8 1990	48203	0.1932	66	Hun, V
Nov.8/9 1990	48204	0.1571	59	Hun, V
Nov.16/17 1990	48212	0.1023	38	Hun, V
Nov.9/10 1990	48205	0.3181	77	China, V
Nov.10/11 1990	48206	0.2685	64	China, V
Nov.11/12 1990	48207	0.3108	81	China, V
Nov.12/13 1990	48208	0.3111	90	China, V
Nov.13/14 1990	48209	0.1444	43	China, V
Nov.22/23 1990	48218	0.1881	53	China, V
Nov.25/26 1990	48221	0.1230	31	China, V
Nov.26/27 1990	48222	0.1219	36	China, V
1990 all		2.2385	638	
Nov.23/24 1994	49679	0.2007	37	Hun, V,B
Nov.22/23 1994	49680	0.1865	27	Hun, V,B
1994 all		0.3872	64	

Single site observations were not tried in Hungary for VW Ari, due to the unsuccessful attempts in the cases of the previous targets. Immediately an international campaign was organized in 1987 to get long and preferably continuous datasets with the contribution of Hungary, Mexico, China and Spain. Unfortunately, the achievements of the sites were highly influenced by weather conditions. We could observe only on some nights at each site, two in Hungary (M. Paparó - 50cm telescope at Piskéstető), four in Mexico (J. H. Peña - 85cm telescope at San Pedro Martír), four in China (Li Zhi-ping and Jiang Shi-yang at Xing-long) in Johnson *V* colour. One month later three nights were obtained in Spain in Strömgren colours (E. Rodríguez at the mountain station of Granada observatory). In conclusion, the collected data were not long enough, so it was not satisfactory for publishing a serious paper. Due to the failure, the Chinese data were independently published (Li Zhi-ping and Jiang Shi-yang, 1993) I did not duplicate here their data, but presented in the journal of the observations.

The second Hungarian and Chinese coordinated observation was tried to be carried out in 1990. The Chinese data were later included into the analyses of the STEPHI campaign data (Liu et al., 1996), but they were not published. I include them here to preserve them for the astronomical community. The observations were carried out by Y.Y. Liu and M. Cao. Connected to the Chinese observations there were only three nights observed in Hungary. Obviously, no independent analysis was done.

Although the STEPHI campaign collected data in 1993, a complex campaign was planned and organized by D. Mkrtichian, however, it was not successfully fulfilled. I joined the photometric part of the campaign and two nights were observed in Johnson *V* and *B* colours. It seems that our efforts were not successful for VW Ari. No paper was published but I have preserved the observed data for the astronomical community for further investigation.

The journal of all the observations mentioned above is listed in Table 35. The columns

contain the date, HJD, length of observations in day, number of measurements and remark with the location and the photometric system (filter) used. The sum of the length and number of observations are given for each segment: 1982/1983, 1983/1984, 1987, 1990 and 1994. In all 9.7396 days, 3882 measurements were collected.

Table 36. Comparisons and mean lights of the observations on VW Ari

HJD	Comparisons	Mean	Filter	Remark
2400000+				
45235	HD 15228, HD 15095		b	BMcN
45239-45345	25 Ari=HD 15228		b	BMcN
1982/1983 all		0.0062462	b	BMcN
45639	25 Ari=HD 15228, BD 9° 319		b	BMcN
45646	HD 15095		b	BMcN
45652-45705	25 Ari=HD 15228, BD 9° 319		b	BMcN
1983/1984 all		0.00991097	b	BMcN
47089-47096	c1=HD 15228	0.224919	V	Hun
47089-47096	c2=HD 15042	-0.86349	V	Hun
47085-47088	CM2=HD 15466=BD 8° 386	-0.242983	V	Mex
47121-47128	SAO 110566=8° 386 = HD 15466	-0.239655	b	Span
47121-47128	SAO 110566=8° 386 = HD 15466	-0.419358	u	Span
D 47121-47128	SAO 110566=8° 386 = HD 15466	-0.296319	v	Span
47121-47128	SAO 110566=8° 386 = HD 15466	-0.239756	y	Span
47121-47128	SAO 110566=8° 386 = HD 15466	9.64602e-05	b-y	Span
47121-47128	SAO 110566=8° 386 = HD 15466	-0.0663903	c1	Span
47121-47128	SAO 110566=8° 386 = HD 15466	-0.0567752	m1	Span
47087-47092	c1= HD 152288	0.268638	V	China
48203-48212	c1=HD 15228	0.224096	V	Hun
48203-48212	c2=HD 15042-c1=HD 15228	1.08377	V	Hun
48205-48222	c1=HD 15228	0.266582	V	China
49679-49680	c1=HD 15095	-0.658497	V	Hun
49679-49680	c1=HD 15095-c2=HD 15042	-0.190742	V	Hun
49679-49680	c1=HD 15095	-0.897205	B	Hun
49679-49680	c1=HD 15095-c2=HD 15042	0.195887	B	Hun

Due to the many different segments and the not strictly ordered list of comparison and check stars, the observation of VW Ari ended up with a considerable amount of comparison and check stars. For better handling I summarized them in Table 36. The first coloumn gives the intervals where the same comparisons were used. The second coloumn lists the stars used as comparison. The third coloumn presents the mean value of the certain segment. The mean values are rather different, as not only the comparisons but the filters are also different, given in the fourth coloumn. The mean values are important if we want to create a homogeneous final dataset with the same zero point. In this case the certain segments are shifted to the mean value, giving the pulsation around the mean value. Actually, not the original measurements, but the shifted values to their mean value are included in the tables of this publication. The tables and the related

figures are arranged according to the order of the observational runs given in the journal presented in Table 35.

Table 37. Strömgren b observations in 1982/83 by B. J. McNamara for VW Ari

VW Ari-HD	0.8368 +0.0264	0.9041 -0.0205	0.9679 +0.0115	0.7736 -0.0674
15228	0.8376 +0.0286	0.9063 -0.0320	0.9688 +0.0080	0.7756 -0.0707
2445235 +	0.8397 +0.0359	0.9071 -0.0350	0.9710 +0.0165	0.7766 -0.0671
0.7657 -0.0157	0.8406 +0.0414	0.9092 -0.0408	0.9718 +0.0140	0.7801 -0.0620
0.7679 -0.0065	0.8426 +0.0409	0.9100 -0.0404	0.9757 +0.0187	0.7810 -0.0669
0.7700 -0.0124	0.8436 +0.0452	0.9138 -0.0568	0.9765 +0.0115	0.7830 -0.0707
0.7728 -0.0228	0.8475 +0.0526	0.9147 -0.0576	0.9785 +0.0214	0.7839 -0.0616
0.7746 -0.0238	0.8492 +0.0658	0.9166 -0.0628	0.9795 +0.0269	0.7858 -0.0642
0.7763 -0.0293	0.8512 +0.0666	0.9174 -0.0563	0.9830 +0.0285	0.7869 -0.0709
0.7781 -0.0312	0.8524 +0.0724	0.9195 -0.0569	0.9837 +0.0289	0.7910 -0.0562
0.7797 -0.0294	0.8545 +0.0739	0.9204 -0.0642	0.9861 +0.0260	0.7919 -0.0522
0.7814 -0.0385	0.8554 +0.0822	0.9223 -0.0629	0.9869 +0.0228	0.7939 -0.0486
0.7831 -0.0430	0.8577 +0.0801	0.9231 -0.0646	0.9881 +0.0246	0.7947 -0.0453
0.7869 -0.0515	0.8586 +0.0841	0.9251 -0.0668	0.9902 +0.0310	0.7986 -0.0356
0.7897 -0.0540	0.8606 +0.0820	0.9259 -0.0629	0.9910 +0.0255	0.7994 -0.0289
0.7947 -0.0618	0.8615 +0.0769	0.9279 -0.0697	0.9931 +0.0272	0.8013 -0.0341
0.7956 -0.0596	0.8636 +0.0728	0.9288 -0.0741	0.9940 +0.0316	0.8022 -0.0276
0.7976 -0.0681	0.8645 +0.0804	0.9309 -0.0750	2445239 +	0.8045 -0.0167
0.7986 -0.0684	0.8665 +0.0784	0.9318 -0.0676	0.7369 +0.0361	0.8054 -0.0172
0.8014 -0.0634	0.8673 +0.0710	0.9338 -0.0671	0.7376 +0.0407	0.8075 -0.0069
0.8022 -0.0706	0.8694 +0.0702	0.9346 -0.0660	0.7411 +0.0144	0.8084 -0.0019
0.8042 -0.0581	0.8702 +0.0691	0.9368 -0.0573	0.7417 +0.0212	0.8120 +0.0119
0.8052 -0.0638	0.8724 +0.0702	0.9376 -0.0586	0.7444 +0.0139	0.8130 +0.0083
0.8072 -0.0715	0.8733 +0.0649	0.9396 -0.0577	0.7451 +0.0208	0.8151 +0.0130
0.8083 -0.0763	0.8774 +0.0623	0.9405 -0.0571	0.7468 -0.0006	0.8160 +0.0256
0.8120 -0.0619	0.8784 +0.0553	0.9426 -0.0543	0.7475 +0.0123	0.8180 +0.0196
0.8129 -0.0657	0.8805 +0.0567	0.9435 -0.0540	0.7495 +0.0052	0.8189 +0.0242
0.8148 -0.0492	0.8814 +0.0541	0.9456 -0.0508	0.7502 -0.0071	0.8209 +0.0252
0.8157 -0.0459	0.8834 +0.0418	0.9463 -0.0401	0.7521 +0.0061	0.8218 +0.0261
0.8195 -0.0356	0.8842 +0.0454	0.9485 -0.0317	0.7528 -0.0107	0.8274 +0.0296
0.8205 -0.0300	0.8863 +0.0396	0.9493 -0.0309	0.7548 -0.0255	0.8302 +0.0342
0.8223 -0.0280	0.8872 +0.0359	0.9513 -0.0254	0.7557 -0.0135	0.8323 +0.0336
0.8233 -0.0272	0.8892 +0.0240	0.9520 -0.0200	0.7578 -0.0242	0.8331 +0.0376
0.8252 -0.0208	0.8901 +0.0230	0.9557 -0.0118	0.7587 -0.0302	0.8352 +0.0418
0.8260 -0.0157	0.8922 +0.0201	0.9565 -0.0124	0.7623 -0.0485	0.8360 +0.0437
0.8280 -0.0079	0.8931 +0.0097	0.9585 -0.0038	0.7632 -0.0546	0.8379 +0.0424
0.8289 -0.0041	0.8953 -0.0013	0.9599 -0.0071	0.7651 -0.0507	0.8387 +0.0491
0.8309 +0.0030	0.8962 -0.0042	0.9620 +0.0007	0.7660 -0.0502	0.8405 +0.0456
0.8319 +0.0041	0.8982 -0.0121	0.9627 -0.0003	0.7699 -0.0658	0.8414 +0.0444
0.8339 +0.0202	0.8994 -0.0048	0.9648 +0.0026	0.7707 -0.0654	0.8434 +0.0346
0.8347 +0.0243	0.9032 -0.0229	0.9656 +0.0033	0.7728 -0.0659	0.8442 +0.0342

0.8462 +0.0398	0.9250 -0.0178	0.7253 -0.0105	0.8208 +0.0370	0.9226 -0.0217
0.8471 +0.0433	0.9259 -0.0149	0.7261 -0.0173	0.8237 +0.0406	0.9234 -0.0192
0.8509 +0.0438	0.9280 -0.0182	0.7287 -0.0149	0.8246 +0.0456	0.9241 -0.0136
0.8519 +0.0393	0.9288 -0.0213	0.7293 -0.0213	0.8274 +0.0465	0.9272 -0.0069
0.8543 +0.0367	0.9308 -0.0220	0.7319 -0.0180	0.8282 +0.0391	0.9300 -0.0048
0.8552 +0.0383	0.9317 -0.0205	0.7328 -0.0258	0.8332 +0.0423	0.9308 +0.0002
0.8581 +0.0317	0.9338 -0.0302	0.7355 -0.0206	0.8340 +0.0395	0.9336 +0.0027
0.8590 +0.0353	0.9346 -0.0272	0.7363 -0.0147	0.8392 +0.0410	0.9345 +0.0115
0.8610 +0.0326	0.9367 -0.0321	0.7398 -0.0155	0.8401 +0.0396	0.9374 +0.0104
0.8619 +0.0272	0.9375 -0.0282	0.7407 -0.0138	0.8431 +0.0326	0.9383 +0.0123
0.8638 +0.0296	0.9396 -0.0265	0.7436 -0.0173	0.8440 +0.0357	0.9414 +0.0073
0.8648 +0.0375	0.9404 -0.0287	0.7445 -0.0188	0.8469 +0.0255	0.9470 +0.0385
0.8668 +0.0304	0.9434 -0.0441	0.7495 -0.0202	0.8477 +0.0285	0.9478 +0.0251
0.8678 +0.0386	0.9443 -0.0404	0.7505 -0.0171	0.8506 +0.0219	0.9508 +0.0364
0.8718 +0.0337	0.9472 -0.0335	0.7533 -0.0152	0.8515 +0.0203	0.9517 +0.0355
0.8728 +0.0309	0.9480 -0.0351	0.7542 -0.0174	0.8573 +0.0078	0.9546 +0.0356
0.8748 +0.0177	0.9519 -0.0334	0.7571 -0.0119	0.8582 +0.0087	0.9556 +0.0319
0.8757 +0.0145	0.9527 -0.0394	0.7580 -0.0153	0.8610 +0.0018	0.9597 +0.0327
0.8787 +0.0213	0.9560 -0.0400	0.7609 -0.0164	0.8619 +0.0029	0.9606 +0.0329
0.8796 +0.0305	0.9568 -0.0343	0.7617 -0.0163	0.8647 -0.0044	0.9637 +0.0366
0.8818 +0.0298	0.9588 -0.0347	0.7645 -0.0094	0.8656 -0.0033	0.9645 +0.0322
0.8826 +0.0311	0.9597 -0.0424	0.7653 -0.0175	0.8685 -0.0119	0.9694 +0.0277
0.8845 +0.0279	0.9619 -0.0320	0.7684 -0.0184	0.8694 -0.0118	0.9703 +0.0374
0.8855 +0.0210	0.9628 -0.0266	0.7693 -0.0133	0.8723 -0.0137	0.9730 +0.0301
0.8876 +0.0292	0.9655 -0.0316	0.7740 -0.0186	0.8731 -0.0160	0.9739 +0.0248
0.8886 +0.0125	0.9664 -0.0302	0.7757 -0.0177	0.8760 -0.0263	0.9768 +0.0260
0.8904 +0.0300	0.9705 -0.0315	0.7787 -0.0151	0.8768 -0.0250	0.9777 +0.0333
0.8912 +0.0305	0.9712 -0.0202	0.7796 -0.0050	0.8799 -0.0304	0.9809 +0.0237
0.8939 +0.0198	0.9733 -0.0167	0.7824 -0.0012	0.8807 -0.0313	0.9818 +0.0177
0.8947 +0.0218	0.9754 -0.0137	0.7834 -0.0029	0.8837 -0.0374	2445246 +
0.8986 +0.0156	0.9773 -0.0103	0.7864 -0.0005	0.8845 -0.0361	0.7142 -0.0405
0.8995 +0.0234	0.9782 -0.0191	0.7873 +0.0041	0.8892 -0.0394	0.7151 -0.0505
0.9025 +0.0191	0.9803 -0.0175	0.7918 +0.0072	0.8902 -0.0406	0.7182 -0.0503
0.9033 +0.0185	0.9812 -0.0126	0.7926 +0.0101	0.8932 -0.0485	0.7194 -0.0406
0.9052 +0.0174	0.9832 -0.0137	0.7954 +0.0087	0.8940 -0.0461	0.7235 -0.0519
0.9060 +0.0184	0.9842 -0.0043	0.7970 +0.0109	0.8969 -0.0505	0.7245 -0.0481
0.9081 +0.0081	0.9860 -0.0037	0.8000 +0.0187	0.8977 -0.0498	0.7283 -0.0264
0.9090 +0.0092	0.9867 +0.0018	0.8008 +0.0152	0.9007 -0.0548	0.7293 -0.0343
0.9111 +0.0122	0.9895 +0.0000	0.8038 +0.0167	0.9015 -0.0555	0.7334 -0.0306
0.9119 +0.0026	0.9904 +0.0038	0.8046 +0.0186	0.9050 -0.0514	0.7343 -0.0288
0.9141 +0.0046	0.9922 +0.0076	0.8073 +0.0197	0.9059 -0.0500	0.7388 -0.0238
0.9151 +0.0104	0.9929 +0.0072	0.8082 +0.0235	0.9104 -0.0408	0.7398 -0.0173
0.9171 -0.0024	0.9946 +0.0197	0.8127 +0.0300	0.9112 -0.0428	0.7442 -0.0044
0.9180 -0.0004	0.9952 +0.0146	0.8135 +0.0318	0.9142 -0.0411	0.7451 -0.0054
0.9199 +0.0027	2445245 +	0.8163 +0.0356	0.9151 -0.0447	0.7482 +0.0069
0.9207 -0.0051	0.7206 -0.0060	0.8171 +0.0340	0.9181 -0.0316	0.7492 +0.0114
0.9243 -0.0192	0.7214 -0.0161	0.8199 +0.0348	0.9189 -0.0260	0.7523 +0.0150

0.7532 +0.0304	0.7955 +0.0353	0.9125 +0.0179	0.7685 -0.0216	0.8629 +0.0098
0.7562 +0.0415	0.7990 +0.0295	0.9150 +0.0222	0.7695 -0.0126	0.8636 +0.0075
0.7572 +0.0511	0.7999 +0.0281	0.9157 +0.0225	0.7716 -0.0151	0.8711 +0.0053
0.7604 +0.0544	0.8028 +0.0344	0.9186 +0.0182	0.7724 -0.0121	0.8727 +0.0050
0.7614 +0.0515	0.8036 +0.0362	0.9193 +0.0272	0.7743 -0.0194	0.8748 +0.0132
0.7644 +0.0668	0.8068 +0.0332	0.9228 +0.0370	0.7752 -0.0144	0.8762 +0.0140
0.7652 +0.0638	0.8078 +0.0237	0.9235 +0.0309	0.7775 -0.0154	0.8783 +0.0169
0.7682 +0.0749	0.8106 +0.0189	0.9282 +0.0403	0.7783 -0.0166	0.8790 +0.0201
0.7692 +0.0807	0.8114 +0.0170	0.9289 +0.0523	0.7806 -0.0172	0.8811 +0.0206
0.7722 +0.0807	0.8158 +0.0099	0.9315 +0.0417	0.7817 -0.0198	0.8818 +0.0232
0.7731 +0.0774	0.8166 +0.0148	0.9321 +0.0460	0.7887 -0.0176	0.8837 +0.0142
0.7761 +0.0870	0.8212 +0.0133	0.9344 +0.0258	0.7897 -0.0144	0.8844 +0.0211
0.7770 +0.0933	0.8221 +0.0030	0.9350 +0.0419	0.7906 -0.0127	0.8865 +0.0203
2445250 +	0.8248 +0.0021	0.9377 +0.0441	0.7936 -0.0158	0.8872 +0.0211
0.7297 -0.0131	0.8256 -0.0129	0.9383 +0.0428	0.7952 -0.0026	0.8892 +0.0251
0.7304 +0.0015	0.8285 +0.0053	0.9408 +0.0413	0.7972 -0.0137	0.8899 +0.0259
0.7369 +0.0043	0.8294 -0.0049	0.9416 +0.0426	0.7980 -0.0122	0.8972 +0.0176
0.7379 +0.0038	0.8325 -0.0106	0.9439 +0.0396	0.8003 -0.0147	0.8979 +0.0194
0.7416 +0.0047	0.8338 -0.0285	0.9446 +0.0460	0.8011 -0.0082	0.8999 +0.0208
0.7426 +0.0148	0.8348 -0.0290	0.9482 +0.0460	0.8032 -0.0106	0.9006 +0.0185
0.7455 +0.0212	0.8371 -0.0228	0.9489 +0.0536	0.8040 -0.0129	0.9028 +0.0183
0.7462 +0.0146	0.8377 -0.0313	0.9528 +0.0615	0.8114 -0.0115	0.9036 +0.0113
0.7490 +0.0250	0.8398 -0.0368	0.9535 +0.0420	0.8123 -0.0100	0.9056 +0.0202
0.7498 +0.0342	0.8405 -0.0328	0.9561 +0.0579	0.8143 -0.0085	0.9070 +0.0198
0.7524 +0.0240	0.8576 -0.0435	0.9569 +0.0570	0.8151 -0.0031	0.9092 +0.0273
0.7531 +0.0325	0.8584 -0.0369	0.9595 +0.0528	0.8172 -0.0095	0.9101 +0.0384
0.7557 +0.0412	0.8650 -0.0334	0.9601 +0.0540	0.8180 -0.0074	0.9123 +0.0349
0.7564 +0.0345	0.8659 -0.0360	0.9625 +0.0654	0.8204 -0.0147	0.9130 +0.0283
0.7604 +0.0391	0.8780 -0.0263	0.9632 +0.0543	0.8211 -0.0152	0.9151 +0.0371
0.7610 +0.0464	0.8789 -0.0180	0.9660 +0.0377	0.8233 -0.0142	0.9158 +0.0569
0.7649 +0.0431	0.8817 -0.0280	0.9666 +0.0381	0.8241 -0.0146	0.9249 +0.0339
0.7656 +0.0526	0.8829 -0.0267	0.9691 +0.0413	0.8274 -0.0049	0.9297 +0.0297
0.7683 +0.0613	0.8857 -0.0233	0.9699 +0.0405	0.8281 -0.0006	0.9312 +0.0220
0.7690 +0.0559	0.8863 -0.0326	2445251 +	0.8305 -0.0069	0.9335 +0.0220
0.7715 +0.0512	0.8890 -0.0138	0.7279 +0.0410	0.8314 -0.0093	0.9342 +0.0224
0.7721 +0.0865	0.8899 -0.0143	0.7294 +0.0434	0.8333 -0.0144	0.9366 +0.0248
0.7748 +0.0600	0.8922 -0.0242	0.7324 +0.0322	0.8340 -0.0083	0.9374 +0.0144
0.7755 +0.0638	0.8929 -0.0175	0.7357 +0.0218	0.8490 +0.0055	0.9474 +0.0009
0.7781 +0.0383	0.8967 -0.0185	0.7369 +0.0301	0.8498 +0.0009	0.9481 -0.0019
0.7788 +0.0470	0.8973 +0.0024	0.7495 +0.0081	0.8518 -0.0009	0.9540 -0.0190
0.7810 +0.0192	0.9011 +0.0052	0.7503 +0.0063	0.8525 -0.0010	0.9547 -0.0276
0.7817 +0.0407	0.9018 -0.0036	0.7527 +0.0043	0.8545 -0.0022	0.9567 -0.0217
0.7857 +0.0248	0.9049 -0.0119	0.7543 +0.0006	0.8552 -0.0012	0.9575 -0.0356
0.7863 +0.0218	0.9058 -0.0095	0.7566 -0.0043	0.8572 -0.0033	0.9605 -0.0299
0.7911 +0.0424	0.9085 +0.0352	0.7581 +0.0029	0.8580 -0.0017	0.9620 -0.0374
0.7920 +0.0309	0.9092 +0.0186	0.7656 -0.0164	0.8601 -0.0056	0.9643 -0.0451
0.7948 +0.0377	0.9118 +0.0180	0.7665 -0.0180	0.8608 +0.0002	0.9650 -0.0432

0.9679 -0.0429	0.7764 +0.0268	0.8708 +0.0319	0.9558 -0.0420	0.8604 -0.1035
0.9688 -0.0407	0.7786 +0.0209	0.8715 +0.0358	0.9567 -0.0417	0.8612 -0.1038
2445252 +	0.7795 +0.0150	0.8759 +0.0475	2445254 +	0.8631 -0.1005
0.6963 +0.0199	0.7818 +0.0196	0.8767 +0.0464	0.7583 -0.0184	0.8638 -0.0986
0.6972 +0.0047	0.7829 +0.0186	0.8776 +0.0422	0.7595 -0.0201	0.8658 -0.0997
0.6995 +0.0165	0.7858 +0.0152	0.8800 +0.0447	0.7676 -0.0040	0.8666 -0.1020
0.7003 +0.0176	0.7868 +0.0123	0.8808 +0.0502	0.7694 +0.0075	0.8694 -0.0941
0.7026 +0.0192	0.7890 +0.0123	0.8844 +0.0459	0.7741 +0.0186	0.8701 -0.1025
0.7035 +0.0153	0.7900 +0.0081	0.8852 +0.0500	0.7751 +0.0164	0.8783 -0.0791
0.7075 +0.0009	0.7940 +0.0021	0.8874 +0.0527	0.7797 +0.0305	0.8800 -0.0639
0.7084 -0.0008	0.7950 +0.0027	0.8882 +0.0487	0.7817 +0.0351	0.8831 -0.0582
0.7127 -0.0021	0.7971 -0.0035	0.8902 +0.0588	0.7824 +0.0381	0.8838 -0.0436
0.7136 -0.0115	0.7980 -0.0016	0.8911 +0.0571	0.7898 +0.0421	0.8867 -0.0354
0.7159 -0.0001	0.8081 -0.0302	0.8933 +0.0561	0.7905 +0.0484	0.8874 -0.0375
0.7169 -0.0048	0.8090 -0.0296	0.8942 +0.0582	0.7925 +0.0621	0.8910 -0.0212
0.7190 -0.0071	0.8112 -0.0342	0.8982 +0.0487	0.7933 +0.0552	0.8924 -0.0204
0.7199 -0.0021	0.8121 -0.0321	0.8990 +0.0483	0.7954 +0.0625	0.8954 -0.0067
0.7224 +0.0015	0.8151 -0.0357	0.9011 +0.0363	0.7970 +0.0693	0.8961 -0.0054
0.7232 -0.0034	0.8160 -0.0442	0.9019 +0.0410	0.7991 +0.0736	0.9080 +0.0341
0.7283 -0.0082	0.8205 -0.0427	0.9039 +0.0348	0.8000 +0.0715	0.9096 +0.0315
0.7291 -0.0080	0.8213 -0.0486	0.9048 +0.0366	0.8019 +0.0644	0.9183 +0.0302
0.7312 +0.0073	0.8235 -0.0464	0.9085 +0.0314	0.8026 +0.0639	0.9200 +0.0380
0.7322 -0.0010	0.8244 -0.0485	0.9093 +0.0305	0.8046 +0.0693	0.9224 +0.0460
0.7343 -0.0094	0.8266 -0.0504	0.9114 +0.0265	0.8053 +0.0639	0.9231 +0.0534
0.7353 -0.0026	0.8277 -0.0517	0.9122 +0.0211	0.8100 +0.0707	0.9298 +0.0613
0.7383 +0.0064	0.8299 -0.0480	0.9141 +0.0163	0.8109 +0.0705	0.9307 +0.0579
0.7391 +0.0009	0.8308 -0.0502	0.9149 +0.0146	0.8179 +0.0706	0.9329 +0.0592
0.7399 +0.0009	0.8350 -0.0452	0.9190 +0.0090	0.8205 +0.0605	0.9338 +0.0658
0.7420 -0.0033	0.8360 -0.0473	0.9201 +0.0032	0.8218 +0.0515	0.9386 +0.0616
0.7429 -0.0030	0.8382 -0.0452	0.9221 +0.0033	0.8293 +0.0286	0.9394 +0.0632
0.7450 +0.0114	0.8390 -0.0397	0.9229 -0.0037	0.8301 +0.0195	0.9422 +0.0552
0.7459 +0.0061	0.8414 -0.0357	0.9271 -0.0061	0.8328 +0.0129	0.9429 +0.0463
0.7499 +0.0151	0.8423 -0.0408	0.9279 -0.0128	0.8335 +0.0081	0.9449 +0.0464
0.7508 +0.0093	0.8455 -0.0311	0.9300 -0.0227	0.8355 +0.0046	0.9456 +0.0545
0.7531 +0.0103	0.8464 -0.0269	0.9309 -0.0224	0.8364 -0.0016	0.9478 +0.0454
0.7540 +0.0172	0.8486 -0.0214	0.9331 -0.0273	0.8437 -0.0365	0.9485 +0.0453
0.7572 +0.0185	0.8494 -0.0230	0.9339 -0.0222	0.8444 -0.0408	2445256 +
0.7582 +0.0233	0.8515 -0.0106	0.9391 -0.0318	0.8463 -0.0604	0.6755 -0.0042
0.7602 +0.0274	0.8524 -0.0125	0.9401 -0.0324	0.8471 -0.0627	0.6767 -0.0017
0.7611 +0.0213	0.8570 -0.0010	0.9420 -0.0320	0.8491 -0.0675	0.6835 -0.0149
0.7632 +0.0204	0.8578 +0.0052	0.9433 -0.0303	0.8498 -0.0707	0.6842 -0.0274
0.7643 +0.0090	0.8600 +0.0156	0.9455 -0.0379	0.8525 -0.0791	0.6893 -0.0092
0.7664 +0.0108	0.8609 +0.0136	0.9464 -0.0440	0.8532 -0.0802	0.6902 -0.0168
0.7673 +0.0172	0.8646 +0.0253	0.9497 -0.0428	0.8552 -0.0898	0.6936 -0.0057
0.7725 +0.0206	0.8654 +0.0239	0.9506 -0.0383	0.8559 -0.0882	0.6946 -0.0140
0.7734 +0.0173	0.8677 +0.0249	0.9527 -0.0381	0.8578 -0.0936	0.6987 -0.0114
0.7755 +0.0160	0.8686 +0.0315	0.9535 -0.0331	0.8585 -0.0965	0.6996 -0.0180

0.7032 +0.0089	0.8227 -0.0608	0.6904 +0.0182	0.8004 -0.0660	0.6645 +0.0257
0.7042 -0.0115	0.8265 -0.0558	0.6912 +0.0230	0.8014 -0.0653	0.6669 +0.0145
0.7099 -0.0100	0.8273 -0.0511	0.6940 -0.0019	0.8055 -0.0641	0.6677 +0.0239
0.7106 -0.0011	0.8306 -0.0449	0.6950 -0.0024	0.8062 -0.0696	0.6686 +0.0124
0.7164 +0.0090	0.8314 -0.0399	0.6977 +0.0118	0.8111 -0.0480	0.6713 +0.0078
0.7172 +0.0084	0.8347 -0.0304	0.6987 +0.0050	0.8120 -0.0415	0.6721 +0.0041
0.7206 +0.0159	0.8356 -0.0222	0.7035 -0.0002	0.8145 -0.0415	0.6729 -0.0020
0.7214 +0.0210	0.8387 -0.0180	0.7067 +0.0078	0.8152 -0.0421	0.6759 +0.0069
0.7248 +0.0165	0.8395 -0.0179	0.7075 +0.0021	0.8182 -0.0304	0.6768 -0.0085
0.7258 +0.0275	0.8421 -0.0162	0.7128 -0.0012	0.8191 -0.0307	0.6777 -0.0135
0.7292 +0.0178	0.8430 -0.0091	0.7136 +0.0081	0.8222 -0.0297	0.6805 -0.0229
0.7301 +0.0232	0.8503 +0.0123	0.7159 +0.0012	0.8229 -0.0254	0.6840 -0.0324
0.7336 +0.0350	0.8512 +0.0178	0.7167 +0.0127	0.8258 -0.0174	0.6848 -0.0374
0.7345 +0.0433	0.8562 +0.0256	0.7199 +0.0134	0.8265 -0.0196	0.6859 -0.0339
0.7377 +0.0477	0.8569 +0.0267	0.7207 +0.0215	0.8297 -0.0009	0.6867 -0.0441
0.7385 +0.0480	0.8599 +0.0278	0.7237 +0.0171	0.8303 +0.0044	0.6898 -0.0469
0.7462 +0.0376	0.8607 +0.0341	0.7246 +0.0230	0.8360 +0.0093	0.6908 -0.0445
0.7471 +0.0466	0.8638 +0.0397	0.7273 +0.0190	0.8368 +0.0172	0.6915 -0.0513
0.7526 +0.0320	0.8646 +0.0379	0.7281 +0.0223	0.8414 +0.0151	0.6948 -0.0447
0.7538 +0.0384	0.8675 +0.0328	0.7320 +0.0192	0.8422 +0.0203	0.6956 -0.0463
0.7571 +0.0396	0.8696 +0.0413	0.7328 +0.0222	0.8452 +0.0332	0.6989 -0.0652
0.7581 +0.0406	0.8727 +0.0361	0.7378 +0.0278	0.8466 +0.0420	0.7007 -0.0651
0.7609 +0.0399	0.8734 +0.0435	0.7386 +0.0234	0.8503 +0.0382	0.7016 -0.0580
0.7618 +0.0324	0.8765 +0.0437	0.7415 +0.0291	0.8512 +0.0462	0.7046 -0.0761
0.7648 +0.0275	0.8772 +0.0406	0.7423 +0.0281	0.8545 +0.0446	0.7056 -0.0707
0.7655 +0.0070	0.8819 +0.0418	0.7451 +0.0255	0.8552 +0.0428	0.7064 -0.0806
0.7687 +0.0152	0.8827 +0.0350	0.7460 +0.0218	0.8582 +0.0571	0.7092 -0.0796
0.7695 +0.0182	0.8880 +0.0322	0.7490 +0.0205	0.8590 +0.0574	0.7122 -0.0725
0.7726 +0.0057	0.8887 +0.0337	0.7498 +0.0253	0.8622 +0.0488	0.7130 -0.0661
0.7735 +0.0015	0.8918 +0.0256	0.7528 +0.0236	0.8630 +0.0417	0.7137 -0.0701
0.7844 -0.0143	0.8926 +0.0273	0.7535 +0.0242	0.8660 +0.0492	0.7167 -0.0701
0.7853 -0.0148	0.8958 +0.0257	0.7679 -0.0038	0.8668 +0.0544	0.7173 -0.0671
0.7897 -0.0323	0.8965 +0.0150	0.7686 -0.0092	2445285 +	0.7218 -0.0596
0.7905 -0.0224	0.8995 +0.0222	0.7729 -0.0061	0.6410 +0.0559	0.7225 -0.0619
0.7940 -0.0351	0.9003 +0.0224	0.7737 -0.0051	0.6418 +0.0593	0.7232 -0.0597
0.7948 -0.0308	0.9031 +0.0129	0.7763 -0.0164	0.6447 +0.0591	0.7280 -0.0441
0.7980 -0.0342	0.9041 +0.0105	0.7770 -0.0217	0.6455 +0.0480	0.7287 -0.0484
0.7988 -0.0365	0.9068 +0.0187	0.7797 -0.0258	0.6480 +0.0558	0.7296 -0.0457
0.8016 -0.0526	0.9076 +0.0180	0.7806 -0.0294	0.6488 +0.0477	0.7321 -0.0459
0.8023 -0.0452	0.9171 -0.0320	0.7834 -0.0280	0.6522 +0.0393	0.7330 -0.0405
0.8054 -0.0464	2445270 +	0.7842 -0.0252	0.6531 +0.0417	0.7339 -0.0409
0.8062 -0.0460	0.6754 +0.0394	0.7876 -0.0375	0.6559 +0.0555	0.7370 -0.0227
0.8098 -0.0469	0.6763 +0.0321	0.7884 -0.0362	0.6567 +0.0415	0.7378 -0.0244
0.8107 -0.0459	0.6821 +0.0372	0.7918 -0.0470	0.6589 +0.0370	0.7385 -0.0141
0.8158 -0.0517	0.6828 +0.0485	0.7933 -0.0495	0.6596 +0.0362	0.7413 -0.0050
0.8166 -0.0562	0.6863 +0.0196	0.7962 -0.0620	0.6629 +0.0180	0.7420 -0.0058
0.8219 -0.0641	0.6871 +0.0117	0.7970 -0.0729	0.6637 +0.0298	0.7428 -0.0006

0.7461 +0.0044	0.8197 +0.0047	0.5983 +0.0321	0.6869 -0.0115	0.6410 +0.0245
0.7471 -0.0019	0.8225 -0.0079	0.5990 +0.0391	0.6905 +0.0052	0.6417 +0.0287
0.7477 +0.0060	0.8234 -0.0113	0.6015 +0.0355	0.6914 +0.0174	0.6444 +0.0433
0.7516 +0.0178	0.8242 -0.0127	0.6022 +0.0239	0.6946 +0.0098	0.6451 +0.0364
0.7525 +0.0321	0.8267 -0.0201	0.6040 +0.0357	0.6954 +0.0110	0.6476 +0.0327
0.7532 +0.0249	0.8293 -0.0241	0.6048 +0.0385	0.6980 +0.0187	0.6500 +0.0337
0.7588 +0.0444	0.8301 -0.0306	0.6080 -0.0126	0.6987 +0.0131	0.6542 +0.0384
0.7596 +0.0439	0.8308 -0.0292	0.6088 +0.0011	0.7012 +0.0228	0.6551 +0.0455
0.7603 +0.0435	0.8344 -0.0360	0.6118 -0.0091	0.7019 +0.0111	0.6577 +0.0419
0.7632 +0.0531	0.8351 -0.0312	0.6155 -0.0064	0.7043 +0.0173	0.6584 +0.0408
0.7639 +0.0557	0.8360 -0.0363	0.6162 -0.0161	0.7050 +0.0307	0.6611 +0.0403
0.7646 +0.0662	0.8391 -0.0428	0.6199 -0.0191	2445318 +	0.6638 +0.0409
0.7676 +0.0654	0.8399 -0.0491	0.6207 -0.0093	0.5756 -0.0354	0.6665 +0.0336
0.7684 +0.0680	0.8407 -0.0494	0.6233 -0.0211	0.5762 -0.0375	0.6672 +0.0340
0.7691 +0.0709	0.8431 -0.0508	0.6240 -0.0403	0.5788 -0.0283	0.6699 +0.0351
0.7718 +0.0579	0.8439 -0.0499	0.6265 -0.0342	0.5812 -0.0367	0.6707 +0.0252
0.7725 +0.0666	0.8449 -0.0550	0.6272 -0.0320	0.5842 -0.0416	0.6734 +0.0199
0.7733 +0.0721	0.8475 -0.0671	0.6296 -0.0308	0.5850 -0.0547	0.6741 +0.0238
0.7758 +0.0671	0.8502 -0.0600	0.6304 -0.0269	0.5873 -0.0499	0.6767 +0.0172
0.7765 +0.0612	0.8511 -0.0623	0.6331 -0.0367	0.5880 -0.0524	0.6774 +0.0118
0.7772 +0.0624	0.8526 -0.0528	0.6339 -0.0275	0.5915 -0.0497	0.6809 +0.0114
0.7807 +0.0623	0.8554 -0.0585	0.6372 -0.0519	0.5921 -0.0374	0.6817 +0.0167
0.7814 +0.0598	0.8562 -0.0631	0.6379 -0.0292	0.5948 -0.0451	0.6849 +0.0147
0.7841 +0.0573	0.8597 -0.0535	0.6443 -0.0649	0.5972 -0.0440	0.6856 +0.0122
0.7849 +0.0720	0.8605 -0.0561	0.6449 -0.0612	0.5997 -0.0430	0.6864 +0.0127
0.7857 +0.0700	0.8612 -0.0491	0.6474 -0.0514	0.6004 -0.0425	0.6889 +0.0052
0.7885 +0.0574	0.8637 -0.0534	0.6482 -0.0449	0.6028 -0.0353	0.6895 +0.0026
0.7891 +0.0616	0.8645 -0.0579	0.6513 -0.0439	0.6035 -0.0311	0.6920 +0.0029
0.7899 +0.0647	0.8653 -0.0514	0.6521 -0.0568	0.6059 -0.0351	0.6927 -0.0006
0.7929 +0.0622	0.8678 -0.0431	0.6554 -0.0559	0.6084 -0.0286	0.6958 -0.0017
0.7937 +0.0578	0.8685 -0.0370	0.6561 -0.0496	0.6120 -0.0331	0.6965 -0.0022
0.7945 +0.0562	0.8691 -0.0436	0.6587 -0.0381	0.6144 -0.0258	0.6998 -0.0045
0.7988 +0.0521	2445317 +	0.6613 -0.0516	0.6150 -0.0240	0.7007 -0.0015
0.7995 +0.0468	0.5717 +0.0555	0.6620 -0.0398	0.6174 -0.0218	0.7013 +0.0029
0.8002 +0.0488	0.5725 +0.0610	0.6652 -0.0295	0.6180 -0.0141	0.7031 -0.0042
0.8027 +0.0430	0.5760 +0.0523	0.6659 -0.0204	0.6204 -0.0097	0.7039 -0.0039
0.8036 +0.0365	0.5767 +0.0582	0.6684 -0.0315	0.6211 -0.0103	0.7066 -0.0043
0.8044 +0.0371	0.5800 +0.0527	0.6692 -0.0248	0.6237 -0.0085	0.7073 -0.0058
0.8071 +0.0378	0.5816 +0.0676	0.6719 -0.0265	0.6244 -0.0046	0.7097 +0.0083
0.8080 +0.0409	0.5840 +0.0494	0.6726 -0.0320	0.6277 +0.0044	0.7104 -0.0025
0.8087 +0.0332	0.5847 +0.0491	0.6754 -0.0132	0.6283 +0.0060	0.7129 -0.0011
0.8111 +0.0294	0.5881 +0.0473	0.6768 -0.0057	0.6308 +0.0070	0.7136 -0.0086
0.8138 +0.0135	0.5889 +0.0517	0.6797 -0.0197	0.6316 +0.0055	0.7169 -0.0080
0.8146 +0.0121	0.5906 +0.0495	0.6805 -0.0148	0.6343 +0.0090	0.7178 -0.0122
0.8154 +0.0058	0.5914 +0.0390	0.6823 -0.0081	0.6351 +0.0176	0.7210 -0.0043
0.8181 +0.0107	0.5952 +0.0230	0.6830 -0.0032	0.6377 +0.0232	0.7217 -0.0052
0.8189 +0.0055	0.5958 +0.0234	0.6862 -0.0122	0.6385 +0.0258	0.7242 -0.0005

0.7249 -0.0023	0.5851 -0.0230	0.7090 -0.0686	0.6183 -0.0409	0.7108 +0.0257
0.7275 -0.0031	0.5879 -0.0059	0.7097 -0.0637	0.6190 -0.0454	0.7147 +0.0130
0.7282 -0.0049	0.5889 -0.0063	0.7134 -0.0433	0.6232 -0.0403	0.7155 +0.0101
0.7308 -0.0019	0.5931 +0.0017	0.7141 -0.0669	0.6240 -0.0400	0.7162 +0.0179
0.7316 +0.0011	0.5940 -0.0020	0.7171 -0.0596	0.6270 -0.0257	0.7192 +0.0061
0.7342 +0.0004	0.6027 +0.0211	0.7180 -0.0671	0.6277 -0.0303	0.7205 +0.0049
0.7369 -0.0003	0.6034 +0.0204	0.7275 -0.0490	0.6303 -0.0269	0.7230 +0.0032
0.7396 -0.0002	0.6064 +0.0116	0.7283 -0.0428	0.6311 -0.0212	0.7237 -0.0068
0.7405 +0.0006	0.6072 +0.0237	0.7318 -0.0253	0.6337 -0.0199	0.7271 -0.0029
0.7431 +0.0057	0.6101 +0.0291	0.7325 -0.0341	0.6345 -0.0220	0.7278 -0.0072
0.7439 +0.0026	0.6108 +0.0307	0.7377 -0.0270	0.6380 -0.0098	0.7304 -0.0107
0.7467 +0.0030	0.6140 +0.0350	0.7384 -0.0216	0.6388 -0.0130	0.7311 -0.0159
0.7477 +0.0027	0.6148 +0.0290	0.7411 -0.0213	0.6437 +0.0018	0.7370 -0.0325
0.7512 +0.0055	0.6184 +0.0353	0.7420 -0.0199	0.6446 +0.0097	0.7378 -0.0316
0.7520 +0.0090	0.6191 +0.0348	0.7448 -0.0015	0.6473 +0.0115	0.7422 -0.0443
0.7560 +0.0003	0.6261 +0.0535	0.7455 -0.0129	0.6485 +0.0134	0.7429 -0.0441
0.7566 +0.0097	0.6269 +0.0485	0.7484 -0.0067	0.6512 +0.0254	0.7466 -0.0589
0.7596 -0.0004	0.6294 +0.0480	0.7491 -0.0102	0.6519 +0.0207	0.7473 -0.0515
0.7628 -0.0095	0.6301 +0.0505	0.7525 +0.0066	0.6546 +0.0281	0.7497 -0.0559
0.7638 -0.0053	0.6332 +0.0522	0.7536 +0.0199	0.6553 +0.0338	0.7504 -0.0538
0.7669 -0.0138	0.6339 +0.0525	2445323 +	0.6578 +0.0256	0.7529 -0.0615
0.7677 -0.0085	0.6368 +0.0633	0.5542 -0.0012	0.6585 +0.0261	0.7535 -0.0602
0.7704 -0.0111	0.6376 +0.0686	0.5583 +0.0283	0.6624 +0.0401	0.7561 -0.0678
0.7711 -0.0105	0.6405 +0.0576	0.5591 +0.0417	0.6630 +0.0485	0.7568 -0.0664
0.7738 -0.0084	0.6411 +0.0573	0.5649 +0.0181	0.6677 +0.0496	0.7599 -0.0781
0.7747 -0.0101	0.6450 +0.0629	0.5657 +0.0099	0.6684 +0.0408	0.7606 -0.0746
0.7773 -0.0100	0.6457 +0.0564	0.5683 +0.0018	0.6711 +0.0471	0.7648 -0.0682
0.7780 -0.0140	0.6494 +0.0584	0.5691 +0.0073	0.6724 +0.0459	0.7655 -0.0616
0.7805 -0.0116	0.6501 +0.0513	0.5717 +0.0041	0.6749 +0.0382	0.7682 -0.0706
0.7815 -0.0149	0.6548 +0.0480	0.5724 -0.0107	0.6756 +0.0509	0.7690 -0.0607
0.7827 -0.0109	0.6558 +0.0498	0.5767 -0.0071	0.6782 +0.0509	0.7714 -0.0598
0.7855 -0.0179	0.6590 +0.0294	0.5779 -0.0214	0.6789 +0.0502	0.7722 -0.0567
0.7863 -0.0193	0.6599 +0.0304	0.5787 -0.0315	0.6816 +0.0479	0.7748 -0.0500
0.7890 -0.0186	0.6640 +0.0316	0.5824 -0.0427	0.6823 +0.0494	0.7762 -0.0465
0.7898 -0.0116	0.6648 +0.0262	0.5832 -0.0406	0.6864 +0.0419	0.7789 -0.0397
0.7933 -0.0175	0.6682 +0.0142	0.5887 -0.0442	0.6872 +0.0449	0.7796 -0.0319
0.7943 -0.0234	0.6689 +0.0121	0.5899 -0.0498	0.6918 +0.0445	0.7820 -0.0376
0.7966 -0.0215	0.6723 +0.0063	0.5926 -0.0481	0.6925 +0.0514	0.7826 -0.0321
0.7973 -0.0094	0.6730 +0.0047	0.5934 -0.0497	0.6950 +0.0476	2445345 +
2445320 +	0.6768 -0.0049	0.5941 -0.0517	0.6957 +0.0414	0.5560 -0.0103
0.5703 -0.0430	0.6777 -0.0069	0.5972 -0.0595	0.6984 +0.0403	0.5611 -0.0205
0.5712 -0.0384	0.6828 -0.0244	0.5979 -0.0569	0.6993 +0.0399	0.5645 -0.0356
0.5770 -0.0321	0.6836 -0.0301	0.6014 -0.0599	0.7022 +0.0396	0.5652 -0.0358
0.5777 -0.0292	0.6865 -0.0319	0.6021 -0.0598	0.7029 +0.0353	0.5681 -0.0436
0.5805 -0.0246	0.6877 -0.0436	0.6049 -0.0538	0.7057 +0.0304	0.5689 -0.0525
0.5812 -0.0298	0.7028 -0.0700	0.6057 -0.0633	0.7065 +0.0258	0.5720 -0.0549
0.5842 -0.0195	0.7035 -0.0682	0.6167 -0.0485	0.7100 +0.0262	0.5728 -0.0648

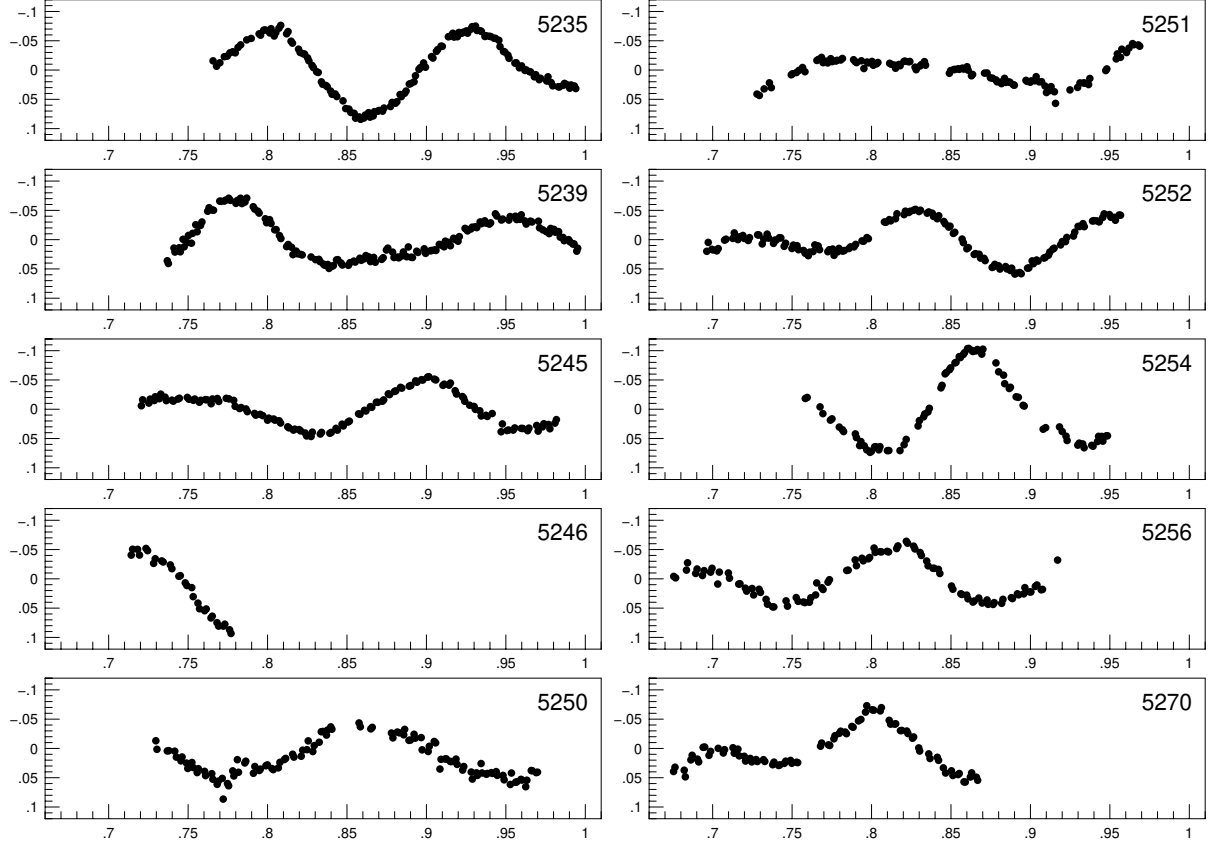


Figure 34: Light curves of VW Ari – HD 15228 obtained by B. J. McNamara in Strömgren *b* colour in 1982/1983.

0.5796 −0.0733	0.6037 −0.0466	0.6244 +0.0038	0.6456 +0.0309	0.6689 +0.0270
0.5803 −0.0707	0.6046 −0.0413	0.6251 +0.0116	0.6466 +0.0311	0.6696 +0.0268
0.5850 −0.0805	0.6081 −0.0314	0.6277 −0.0028	0.6502 +0.0362	0.6729 +0.0375
0.5858 −0.0725	0.6088 −0.0320	0.6286 +0.0120	0.6508 +0.0392	0.6735 +0.0405
0.5885 −0.0820	0.6116 −0.0298	0.6316 +0.0221	0.6544 +0.0356	0.6760 +0.0314
0.5894 −0.0780	0.6125 −0.0236	0.6324 +0.0228	0.6551 +0.0281	0.6767 +0.0348
0.5924 −0.0756	0.6149 −0.0140	0.6353 +0.0251	0.6589 +0.0578	0.6801 +0.0313
0.5930 −0.0721	0.6155 −0.0143	0.6362 +0.0120	0.6597 +0.0412	0.6808 +0.0292
0.5970 −0.0699	0.6191 −0.0060	0.6401 +0.0229	0.6655 +0.0507	
0.5983 −0.0650	0.6198 +0.0007	0.6408 +0.0234	0.6663 +0.0398	

Table 38. Strömgren *b* observations in 1983/84 by B. J. McNamara for VW Ari

VW Ari-HD	0.6492 +0.0007	0.6562 +0.0126	0.6697 +0.0016	0.6837 +0.0119
15288	0.6498 +0.0080	0.6596 +0.0250	0.6716 +0.0010	0.6875 +0.0142
2445639 +	0.6521 +0.0134	0.6602 +0.0119	0.6794 +0.0114	0.6888 +0.0121
0.6452 −0.0067	0.6526 +0.0205	0.6663 +0.0113	0.6805 +0.0123	0.6909 +0.0077
0.6457 +0.0033	0.6555 +0.0141	0.6670 +0.0187	0.6826 +0.0105	0.6915 +0.0122

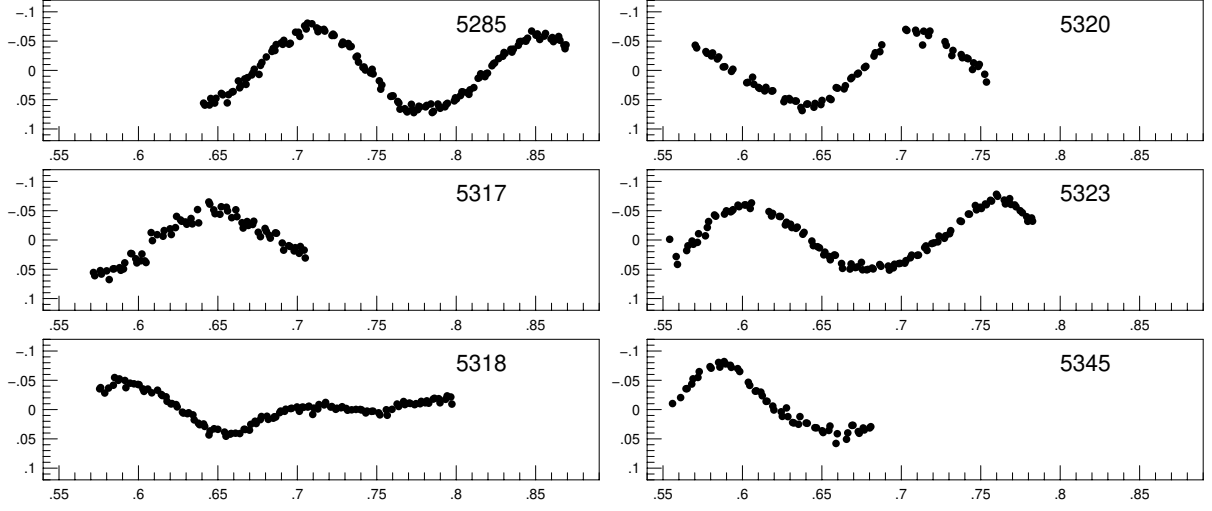


Figure 35: Continuation of light curves of VW Ari - HD 15228 obtained by B. J. McNamara in Strömgren *b* colour in 1982/1983.

0.6937 +0.0064	0.6586 -0.0081	0.7062 -0.0082	0.7441 -0.0173	0.7840 +0.0357
0.6943 +0.0124	0.6605 -0.0154	0.7067 -0.0054	0.7468 +0.0025	0.7845 +0.0377
0.6974 +0.0002	0.6616 -0.0053	0.7086 -0.0137	0.7473 -0.0006	0.7867 +0.0359
0.6980 +0.0053	0.6639 -0.0090	0.7091 -0.0155	0.7491 +0.0085	0.7872 +0.0331
0.7014 -0.0012	0.6644 -0.0128	0.7110 -0.0162	0.7496 +0.0143	0.7892 +0.0281
0.7020 +0.0001	0.6671 -0.0089	0.7115 -0.0093	0.7515 +0.0038	0.7897 +0.0349
0.7042 +0.0073	0.6678 -0.0142	0.7134 -0.0074	0.7521 +0.0038	0.7921 +0.0386
0.7051 +0.0038	0.6709 -0.0051	0.7139 -0.0194	0.7541 +0.0082	0.7925 +0.0376
0.7087 +0.0096	0.6719 +0.0064	0.7166 -0.0135	0.7546 +0.0037	0.7946 +0.0367
0.7110 +0.0055	0.6747 -0.0058	0.7171 -0.0139	0.7577 +0.0227	0.7957 +0.0307
0.7116 +0.0076	0.6753 -0.0033	0.7195 -0.0216	0.7584 +0.0232	0.7977 +0.0221
0.7147 -0.0014	0.6773 +0.0025	0.7200 -0.0230	0.7606 +0.0206	0.7982 +0.0185
0.7158 -0.0101	0.6779 -0.0001	0.7217 -0.0213	0.7611 +0.0172	0.8010 +0.0154
0.7196 -0.0080	0.6815 +0.0045	0.7223 -0.0273	0.7630 +0.0186	0.8015 +0.0155
0.7202 -0.0054	0.6820 +0.0014	0.7242 -0.0119	0.7635 +0.0193	0.8033 +0.0158
0.7236 -0.0022	0.6848 -0.0001	0.7247 -0.0122	0.7654 +0.0279	0.8053 +0.0058
0.7241 -0.0016	0.6853 +0.0049	0.7268 -0.0226	0.7658 +0.0228	0.8058 +0.0063
2445646 +	0.6884 +0.0095	0.7273 -0.0291	0.7677 +0.0276	0.8077 +0.0130
0.6424 +0.0034	0.6889 +0.0052	0.7290 -0.0289	0.7682 +0.0275	0.8082 +0.0111
0.6429 -0.0164	0.6915 +0.0048	0.7303 -0.0230	0.7706 +0.0287	0.8102 +0.0071
0.6456 -0.0125	0.6920 +0.0055	0.7322 -0.0168	0.7711 +0.0324	0.8109 +0.0003
0.6462 -0.0110	0.6950 +0.0093	0.7332 -0.0142	0.7729 +0.0377	0.8132 -0.0015
0.6484 -0.0211	0.6955 +0.0067	0.7351 -0.0186	0.7733 +0.0351	0.8138 -0.0053
0.6489 -0.0166	0.6975 -0.0101	0.7356 -0.0163	0.7752 +0.0414	0.8157 -0.0049
0.6512 -0.0066	0.6980 -0.0109	0.7384 -0.0139	0.7757 +0.0386	0.8167 -0.0122
0.6517 -0.0114	0.7002 -0.0071	0.7390 -0.0231	0.7792 +0.0361	0.8197 -0.0073
0.6549 -0.0097	0.7007 -0.0060	0.7412 -0.0094	0.7797 +0.0394	0.8202 -0.0025
0.6554 -0.0091	0.7027 -0.0034	0.7417 -0.0123	0.7815 +0.0429	0.8221 -0.0160
0.6581 -0.0144	0.7037 +0.0036	0.7437 -0.0111	0.7820 +0.0429	0.8225 -0.0117

0.8245	-0.0146	0.8471	-0.0217	0.8739	-0.0125	0.8977	-0.0076	0.9245	+0.0172
0.8252	-0.0142	0.8501	-0.0242	0.8750	-0.0128	0.9004	+0.0050	0.9250	+0.0144
0.8273	-0.0226	0.8506	-0.0308	0.8770	-0.0131	0.9009	-0.0005	0.9269	+0.0178
0.8278	-0.0179	0.8532	-0.0231	0.8775	-0.0138	0.9028	+0.0056	0.9274	+0.0091
0.8298	-0.0239	0.8537	-0.0227	0.8797	-0.0072	0.9041	+0.0016	2445652	+
0.8303	-0.0307	0.8561	-0.0319	0.8802	-0.0094	0.9070	-0.0022	0.6504	-0.0159
0.8323	-0.0222	0.8566	-0.0258	0.8837	-0.0050	0.9075	-0.0007	0.6515	-0.0085
0.8328	-0.0182	0.8590	-0.0284	0.8842	-0.0005	0.9096	+0.0161	0.6546	-0.0144
0.8347	-0.0256	0.8595	-0.0219	0.8868	+0.0020	0.9101	+0.0045	0.6573	+0.0079
0.8352	-0.0313	0.8640	-0.0246	0.8879	+0.0024	0.9128	+0.0116	0.6684	+0.0228
0.8375	-0.0265	0.8645	-0.0219	0.8899	-0.0063	0.9133	+0.0262	0.6700	+0.0300
0.8379	-0.0269	0.8665	-0.0212	0.8904	-0.0042	0.9156	+0.0164	0.6755	+0.0106
0.8416	-0.0196	0.8671	-0.0163	0.8925	-0.0026	0.9170	+0.0118	0.6775	+0.0347
0.8421	-0.0247	0.8690	-0.0202	0.8930	-0.0055	0.9190	+0.0159	0.6792	+0.0493
0.8442	-0.0268	0.8697	-0.0144	0.8948	-0.0022	0.9196	+0.0254	0.6859	+0.0649
0.8447	-0.0245	0.8716	-0.0141	0.8953	-0.0030	0.9219	+0.0234	0.6877	+0.0500
0.8465	-0.0230	0.8721	-0.0179	0.8971	-0.0128	0.9226	+0.0100	0.6934	+0.0394

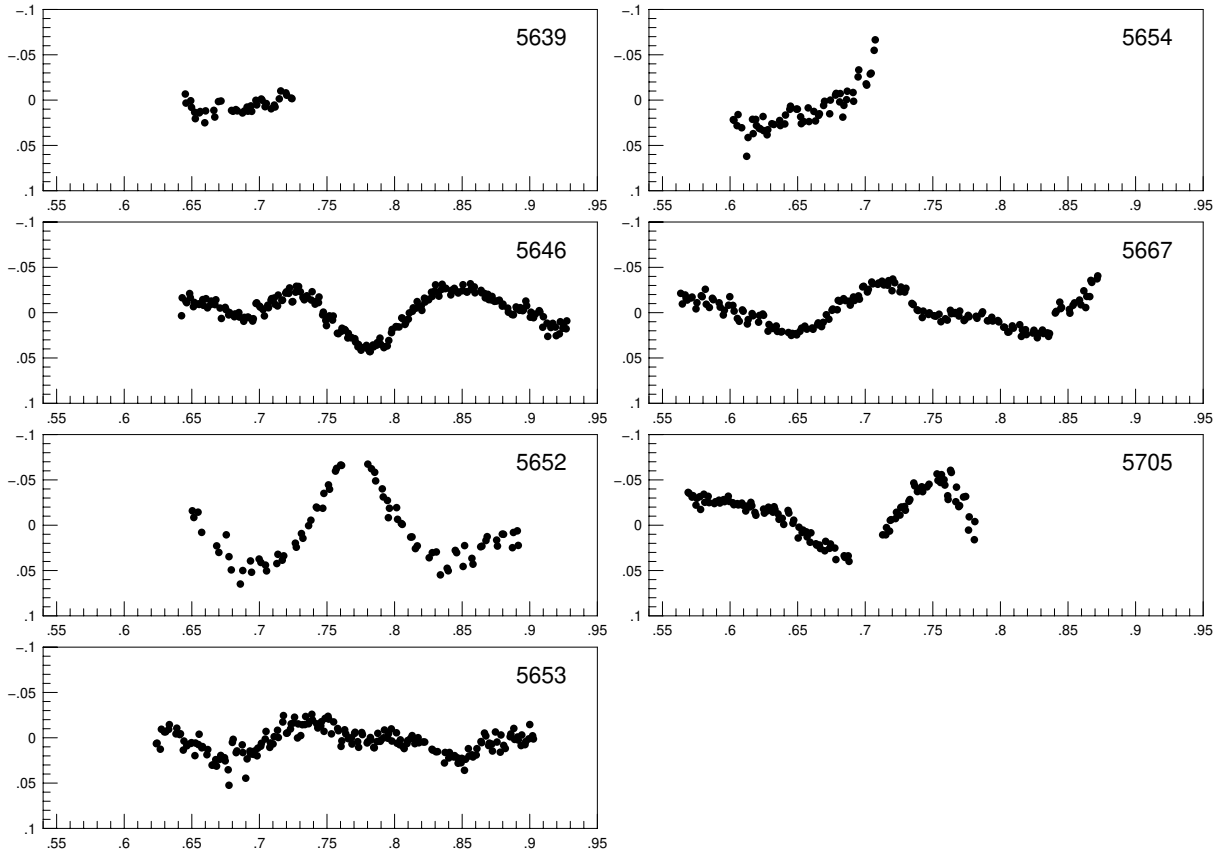


Figure 36: Light curves of VW Ari – HD 15228 obtained by B. J. McNamara in Strömgren *b* colour in 1983/1984.

0.6942 +0.0519	0.8397 +0.0503	0.6656 +0.0300	0.7364 -0.0155	0.8018 +0.0060
0.6998 +0.0373	0.8449 +0.0278	0.6677 +0.0241	0.7370 -0.0176	0.8038 +0.0077
0.7011 +0.0411	0.8459 +0.0303	0.6683 +0.0313	0.7388 -0.0259	0.8043 +0.0023
0.7045 +0.0440	0.8507 +0.0455	0.6706 +0.0238	0.7393 -0.0196	0.8063 +0.0098
0.7053 +0.0504	0.8518 +0.0225	0.6714 +0.0195	0.7424 -0.0154	0.8071 +0.0119
0.7129 +0.0423	0.8572 +0.0366	0.6742 +0.0220	0.7432 -0.0108	0.8092 +0.0064
0.7137 +0.0321	0.8580 +0.0430	0.6747 +0.0255	0.7454 -0.0132	0.8097 +0.0031
0.7169 +0.0386	0.8637 +0.0238	0.6769 +0.0353	0.7459 -0.0177	0.8118 +0.0008
0.7180 +0.0338	0.8646 +0.0231	0.6775 +0.0524	0.7478 -0.0071	0.8130 -0.0024
0.7266 +0.0198	0.8676 +0.0169	0.6800 +0.0051	0.7486 -0.0214	0.8150 +0.0065
0.7273 +0.0243	0.8685 +0.0126	0.6806 +0.0017	0.7508 -0.0237	0.8155 +0.0012
0.7311 +0.0092	0.8755 +0.0164	0.6828 +0.0164	0.7513 -0.0206	0.8174 -0.0001
0.7322 +0.0144	0.8761 +0.0230	0.6834 +0.0145	0.7533 -0.0043	0.8180 +0.0055
0.7364 +0.0005	0.8797 +0.0098	0.6873 +0.0078	0.7549 -0.0175	0.8212 +0.0046
0.7381 -0.0055	0.8806 +0.0100	0.6878 +0.0163	0.7579 -0.0102	0.8223 +0.0047
0.7421 -0.0200	0.8872 +0.0248	0.6899 +0.0446	0.7585 -0.0078	0.8277 +0.0127
0.7428 -0.0190	0.8879 +0.0080	0.6909 +0.0233	0.7604 +0.0095	0.8282 +0.0136
0.7469 -0.0187	0.8908 +0.0062	0.6930 +0.0146	0.7610 +0.0034	0.8306 +0.0154
0.7477 -0.0351	0.8915 +0.0223	0.6935 +0.0179	0.7631 -0.0088	0.8318 +0.0153
0.7511 -0.0445	2445653 +	0.6957 +0.0183	0.7639 -0.0043	0.8369 +0.0278
0.7519 -0.0397	0.6238 +0.0065	0.6963 +0.0147	0.7658 +0.0010	0.8374 +0.0162
0.7563 -0.0597	0.6243 +0.0059	0.6983 +0.0199	0.7663 +0.0001	0.8401 +0.0223
0.7571 -0.0627	0.6267 +0.0126	0.6988 +0.0115	0.7681 +0.0001	0.8406 +0.0162
0.7601 -0.0664	0.6275 -0.0094	0.7010 +0.0093	0.7685 +0.0069	0.8438 +0.0212
0.7608 -0.0660	0.6297 -0.0065	0.7015 +0.0061	0.7704 -0.0048	0.8444 +0.0197
0.7802 -0.0674	0.6307 -0.0066	0.7043 +0.0014	0.7708 -0.0061	0.8465 +0.0221
0.7829 -0.0623	0.6329 -0.0093	0.7049 -0.0070	0.7727 +0.0043	0.8470 +0.0281
0.7853 -0.0584	0.6334 -0.0145	0.7077 +0.0106	0.7734 +0.0105	0.8492 +0.0276
0.7860 -0.0489	0.6383 -0.0043	0.7082 +0.0057	0.7757 -0.0058	0.8497 +0.0227
0.7909 -0.0401	0.6389 -0.0106	0.7101 +0.0068	0.7762 -0.0035	0.8517 +0.0359
0.7916 -0.0312	0.6411 -0.0035	0.7109 -0.0012	0.7797 +0.0057	0.8525 +0.0237
0.7947 -0.0273	0.6416 -0.0044	0.7134 -0.0083	0.7802 +0.0043	0.8546 +0.0120
0.7954 -0.0083	0.6437 +0.0136	0.7140 -0.0003	0.7821 -0.0003	0.8551 +0.0201
0.7962 -0.0187	0.6442 +0.0036	0.7173 -0.0174	0.7826 +0.0024	0.8573 +0.0188
0.8015 -0.0194	0.6463 +0.0089	0.7178 -0.0245	0.7846 +0.0106	0.8580 +0.0212
0.8022 -0.0065	0.6467 +0.0077	0.7201 -0.0050	0.7850 +0.0111	0.8604 +0.0190
0.8050 -0.0019	0.6493 +0.0062	0.7207 -0.0054	0.7871 +0.0041	0.8609 +0.0120
0.8057 -0.0009	0.6498 +0.0054	0.7230 -0.0097	0.7876 -0.0049	0.8639 +0.0042
0.8119 +0.0131	0.6523 +0.0197	0.7235 -0.0154	0.7894 +0.0039	0.8644 +0.0054
0.8129 +0.0129	0.6527 +0.0058	0.7255 -0.0165	0.7900 +0.0023	0.8665 -0.0052
0.8154 +0.0258	0.6549 +0.0075	0.7260 -0.0227	0.7920 +0.0000	0.8675 -0.0020
0.8168 +0.0228	0.6554 -0.0039	0.7282 +0.0002	0.7925 -0.0086	0.8696 +0.0086
0.8256 +0.0359	0.6574 +0.0111	0.7287 -0.0153	0.7950 +0.0005	0.8701 +0.0059
0.8279 +0.0303	0.6579 +0.0097	0.7306 -0.0024	0.7955 -0.0045	0.8719 +0.0070
0.8309 +0.0295	0.6612 +0.0187	0.7318 -0.0144	0.7976 -0.0098	0.8724 +0.0146
0.8339 +0.0548	0.6618 +0.0130	0.7337 -0.0146	0.7980 +0.0036	0.8746 -0.0064
0.8389 +0.0475	0.6650 +0.0302	0.7342 -0.0235	0.8014 -0.0055	0.8758 +0.0047

0.8782 +0.0159	0.6527 +0.0260	0.5919 -0.0109	0.6793 -0.0032	0.7666 -0.0001
0.8787 -0.0031	0.6545 +0.0237	0.5927 -0.0061	0.6800 -0.0135	0.7693 +0.0037
0.8807 +0.0084	0.6578 +0.0086	0.5950 +0.0026	0.6813 -0.0126	0.7699 -0.0018
0.8819 +0.0118	0.6584 +0.0237	0.5958 -0.0027	0.6840 -0.0154	0.7731 +0.0087
0.8855 -0.0011	0.6620 +0.0125	0.5989 -0.0082	0.6854 -0.0133	0.7739 +0.0072
0.8860 -0.0042	0.6632 +0.0230	0.5998 -0.0176	0.6883 -0.0127	0.7762 +0.0030
0.8882 -0.0103	0.6655 +0.0169	0.6021 -0.0080	0.6889 -0.0083	0.7768 +0.0045
0.8888 +0.0018	0.6661 +0.0151	0.6030 -0.0017	0.6913 -0.0173	0.7820 +0.0040
0.8910 -0.0009	0.6692 +0.0059	0.6054 +0.0064	0.6920 -0.0134	0.7827 +0.0062
0.8915 +0.0025	0.6699 +0.0013	0.6068 +0.0095	0.6950 -0.0185	0.7861 +0.0012
0.8936 +0.0086	0.6737 +0.0151	0.6091 -0.0030	0.6957 -0.0149	0.7868 -0.0009
0.8941 -0.0031	0.6742 +0.0000	0.6097 -0.0016	0.6981 -0.0284	0.7904 +0.0089
0.8965 +0.0076	0.6780 -0.0055	0.6128 +0.0125	0.6988 -0.0291	0.7911 +0.0089
0.8970 +0.0042	0.6785 -0.0074	0.6134 +0.0076	0.7016 -0.0228	0.7936 +0.0051
0.8993 +0.0012	0.6811 +0.0020	0.6163 +0.0010	0.7023 -0.0257	0.7943 +0.0092
0.9000 -0.0146	0.6815 -0.0072	0.6170 +0.0034	0.7048 -0.0338	0.7981 +0.0087
0.9021 -0.0022	0.6834 +0.0188	0.6211 +0.0105	0.7055 -0.0318	0.7988 +0.0102
0.9027 +0.0013	0.6842 +0.0058	0.6217 +0.0031	0.7093 -0.0313	0.8024 +0.0160
2445654 +	0.6862 -0.0005	0.6242 +0.0015	0.7099 -0.0327	0.8031 +0.0161
0.6024 +0.0216	0.6867 -0.0098	0.6248 +0.0029	0.7124 -0.0347	0.8055 +0.0215
0.6029 +0.0223	0.6910 -0.0084	0.6281 +0.0204	0.7138 -0.0306	0.8063 +0.0212
0.6052 +0.0282	0.6914 +0.0013	0.6288 +0.0131	0.7166 -0.0303	0.8088 +0.0146
0.6059 +0.0160	0.6947 -0.0256	0.6310 +0.0161	0.7173 -0.0353	0.8096 +0.0171
0.6086 +0.0305	0.6952 -0.0333	0.6317 +0.0174	0.7198 -0.0242	0.8143 +0.0133
0.6123 +0.0620	0.7007 -0.0179	0.6342 +0.0147	0.7204 -0.0371	0.8155 +0.0262
0.6133 +0.0413	0.7011 -0.0165	0.6350 +0.0207	0.7218 -0.0330	0.8163 +0.0191
0.6166 +0.0212	0.7037 -0.0287	0.6377 +0.0213	0.7257 -0.0230	0.8186 +0.0188
0.6171 +0.0370	0.7044 -0.0297	0.6384 +0.0208	0.7264 -0.0283	0.8192 +0.0242
0.6190 +0.0213	0.7066 -0.0549	0.6432 +0.0219	0.7292 -0.0227	0.8240 +0.0225
0.6195 +0.0280	0.7074 -0.0665	0.6453 +0.0251	0.7301 -0.0269	0.8248 +0.0194
0.6215 +0.0310	2445667 +	0.6461 +0.0229	0.7345 -0.0102	0.8273 +0.0277
0.6224 +0.0318	0.5635 -0.0213	0.6485 +0.0232	0.7355 -0.0089	0.8280 +0.0230
0.6244 +0.0181	0.5647 -0.0096	0.6493 +0.0245	0.7384 -0.0031	0.8311 +0.0192
0.6248 +0.0337	0.5668 -0.0195	0.6517 +0.0206	0.7391 -0.0024	0.8318 +0.0230
0.6274 +0.0383	0.5675 -0.0156	0.6529 +0.0171	0.7422 +0.0054	0.8347 +0.0223
0.6279 +0.0327	0.5683 -0.0139	0.6553 +0.0149	0.7429 -0.0017	0.8356 +0.0262
0.6309 +0.0261	0.5712 -0.0162	0.6568 +0.0182	0.7468 +0.0020	0.8363 +0.0230
0.6324 +0.0269	0.5719 -0.0172	0.6608 +0.0169	0.7474 +0.0002	0.8406 +0.0004
0.6367 +0.0225	0.5748 -0.0042	0.6614 +0.0183	0.7509 +0.0034	0.8413 -0.0014
0.6372 +0.0281	0.5755 -0.0110	0.6647 +0.0134	0.7522 +0.0039	0.8439 -0.0116
0.6405 +0.0263	0.5787 -0.0187	0.6652 +0.0113	0.7546 +0.0017	0.8446 -0.0045
0.6410 +0.0165	0.5794 -0.0176	0.6677 +0.0154	0.7560 +0.0100	0.8452 -0.0058
0.6442 +0.0102	0.5817 -0.0258	0.6689 +0.0107	0.7593 +0.0067	0.8510 -0.0036
0.6447 +0.0067	0.5824 -0.0093	0.6712 +0.0023	0.7607 +0.0082	0.8514 +0.0006
0.6491 +0.0099	0.5847 -0.0057	0.6731 +0.0072	0.7630 -0.0026	0.8537 -0.0081
0.6498 +0.0100	0.5869 -0.0159	0.6754 -0.0026	0.7637 +0.0011	0.8548 -0.0108
0.6522 +0.0184	0.5876 -0.0143	0.6760 -0.0040	0.7660 +0.0009	0.8585 -0.0139

0.8596	-0.0087	0.5925	-0.0245	0.6355	-0.0125	0.6783	+0.0379	0.7425	-0.0370
0.8617	-0.0241	0.5952	-0.0282	0.6362	-0.0065	0.6844	+0.0337	0.7457	-0.0423
0.8631	-0.0056	0.5959	-0.0260	0.6386	-0.0076	0.6850	+0.0355	0.7472	-0.0452
0.8639	-0.0179	0.5987	-0.0320	0.6397	-0.0009	0.6874	+0.0338	0.7531	-0.0566
0.8661	-0.0177	0.5995	-0.0262	0.6429	-0.0163	0.6880	+0.0399	0.7538	-0.0494
0.8669	-0.0356	0.6020	-0.0248	0.6435	-0.0134	0.7129	+0.0106	0.7557	-0.0471
0.8676	-0.0334	0.6028	-0.0226	0.6465	-0.0021	0.7152	+0.0106	0.7564	-0.0558
0.8715	-0.0373	0.6054	-0.0238	0.6471	-0.0056	0.7157	+0.0026	0.7583	-0.0502
0.8720	-0.0406	0.6061	-0.0224	0.6504	+0.0141	0.7180	+0.0065	0.7589	-0.0443
2445705	+	0.6087	-0.0244	0.6510	+0.0022	0.7185	-0.0054	0.7610	-0.0325
0.5690	-0.0362	0.6094	-0.0221	0.6533	+0.0080	0.7192	-0.0061	0.7613	-0.0284
0.5697	-0.0352	0.6116	-0.0157	0.6540	+0.0054	0.7224	-0.0073	0.7631	-0.0606
0.5719	-0.0310	0.6123	-0.0211	0.6564	+0.0073	0.7231	-0.0143	0.7637	-0.0582
0.5726	-0.0326	0.6147	-0.0202	0.6570	+0.0129	0.7257	-0.0112	0.7670	-0.0259
0.5748	-0.0222	0.6154	-0.0252	0.6592	+0.0188	0.7263	-0.0195	0.7675	-0.0420
0.5754	-0.0297	0.6161	-0.0215	0.6598	+0.0084	0.7269	-0.0201	0.7692	-0.0205
0.5776	-0.0315	0.6184	-0.0141	0.6635	+0.0205	0.7291	-0.0206	0.7698	-0.0216
0.5782	-0.0174	0.6191	-0.0110	0.6641	+0.0220	0.7297	-0.0165	0.7727	-0.0311
0.5806	-0.0342	0.6248	-0.0178	0.6661	+0.0218	0.7323	-0.0264	0.7743	-0.0317
0.5813	-0.0253	0.6254	-0.0133	0.6668	+0.0257	0.7330	-0.0283	0.7764	+0.0054
0.5838	-0.0319	0.6277	-0.0159	0.6701	+0.0282	0.7359	-0.0466	0.7769	-0.0092
0.5845	-0.0249	0.6284	-0.0199	0.6707	+0.0178	0.7366	-0.0434	0.7807	+0.0160
0.5884	-0.0239	0.6317	-0.0144	0.6736	+0.0255	0.7386	-0.0371	0.7811	-0.0040
0.5892	-0.0259	0.6326	-0.0204	0.6743	+0.0207	0.7393	-0.0398		
0.5918	-0.0276	0.6332	-0.0174	0.6775	+0.0252	0.7418	-0.0424		

Table 39. Johnson *V* observations in 1987 in Hungary by M. Paparó for VW Ari relative to HD 15228

VW Ari-HD	0.4176 +0.0286	0.4764 −0.0111	0.3451 +0.0158	0.3881 −0.0210
15228	0.4201 +0.0348	0.4789 −0.0040	0.3480 +0.0067	0.3912 −0.0141
2447089 +	0.4224 +0.0612	0.4814 −0.0289	0.3512 +0.0017	0.3939 −0.0075
0.3809 +0.0204	0.4248 +0.0257	0.4835 −0.0188	0.3541 −0.0118	0.3979 −0.0000
0.3833 +0.0283	0.4290 +0.0336	0.4861 −0.0461	0.3568 −0.0156	0.4006 +0.0079
0.3861 −0.0050	0.4314 +0.0137	0.4883 −0.0228	0.3621 −0.0230	0.4045 +0.0131
0.3895 +0.0124	0.4350 −0.0006	0.4907 −0.0211	0.3648 −0.0276	0.4082 +0.0155
0.3924 +0.0026	0.4376 −0.0104	0.4931 −0.0166	0.3679 −0.0318	0.4114 +0.0233
0.3953 +0.0361	0.4412 −0.0129	2447096 +	0.3707 −0.0290	0.4144 +0.0293
0.3979 +0.0440	0.4488 −0.0231	0.3299 +0.0326	0.3734 −0.0376	0.4179 +0.0417
0.4004 +0.0353	0.4515 −0.0158	0.3325 +0.0259	0.3763 −0.0377	0.4210 +0.0558
0.4040 +0.0208	0.4620 +0.0053	0.3363 +0.0171	0.3795 −0.0350	0.4144 +0.0293
0.4119 +0.0210	0.4644 −0.0300	0.3389 +0.0167	0.3824 −0.0342	0.4179 +0.0417
0.4143 +0.0261	0.4671 −0.0300	0.3417 +0.0147	0.3852 −0.0284	

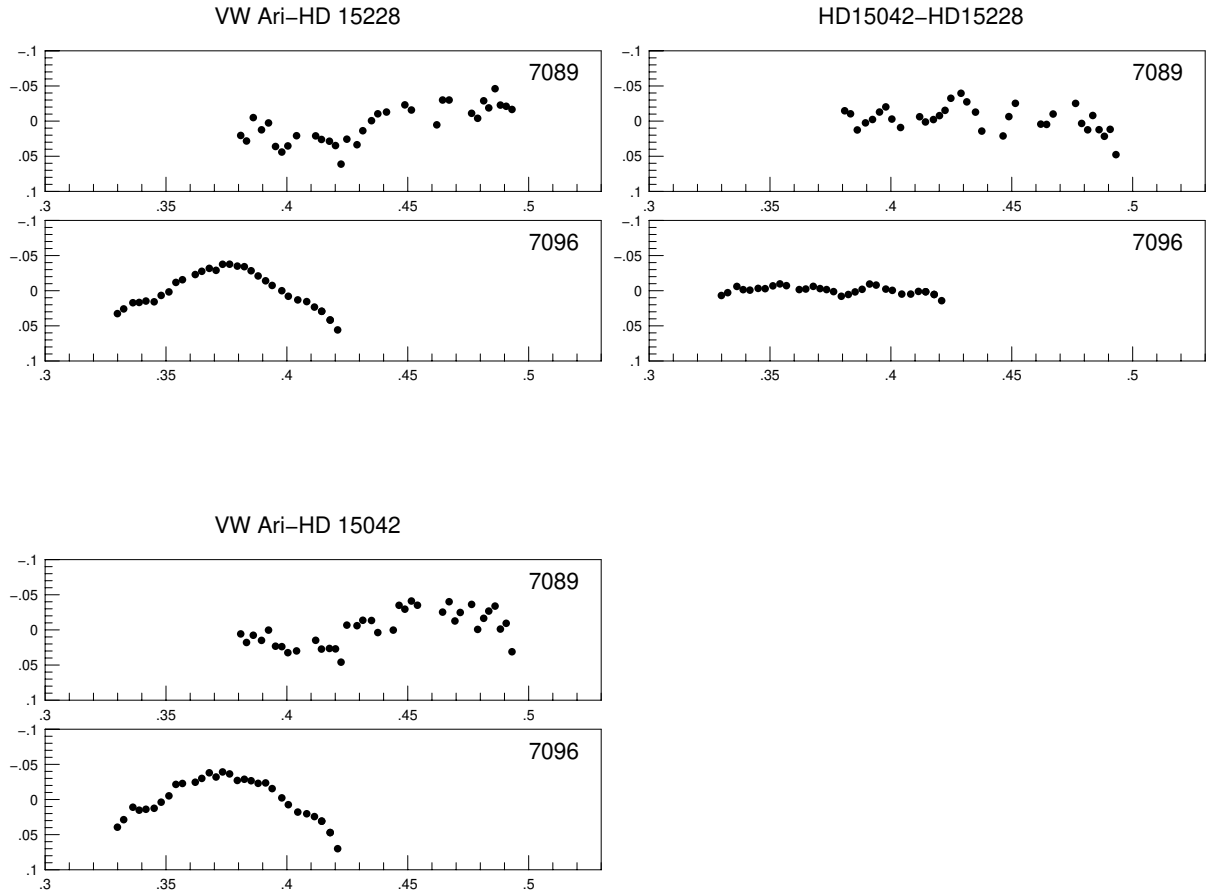


Figure 37: Light curves of Johnson V observations in 1987 in Hungary by M. Paparó for VW Ari relative to HD 15228, to HD 15042 and HD 15052 – HD 15228.

Table 40. Johnson V observations in 1987 in Hungary by M. Paparó for VW Ari relative to HD 15042

VW Ari-HD	0.4201 +0.0270	0.4717 −0.0248	0.3451 +0.0125	0.3912 −0.0236
15042	0.4224 +0.0459	0.4764 −0.0363	0.3480 +0.0038	0.3939 −0.0155
2447089 +	0.4248 −0.0068	0.4789 −0.0007	0.3512 −0.0052	0.3979 −0.0023
0.3809 +0.0057	0.4290 −0.0060	0.4814 −0.0165	0.3541 −0.0215	0.4006 +0.0074
0.3833 +0.0179	0.4314 −0.0137	0.4835 −0.0268	0.3568 −0.0228	0.4045 +0.0179
0.3861 +0.0076	0.4350 −0.0134	0.4861 −0.0339	0.3621 −0.0246	0.4082 +0.0203
0.3895 +0.0149	0.4376 +0.0038	0.4883 −0.0012	0.3648 −0.0300	0.4114 +0.0243
0.3924 +0.0003	0.4440 +0.0003	0.4907 −0.0094	0.3679 −0.0380	0.4144 +0.0308
0.3953 +0.0232	0.4464 −0.0350	0.4931 +0.0311	0.3707 −0.0320	0.4179 +0.0470
0.3979 +0.0238	0.4488 −0.0295	2447096 +	0.3734 −0.0392	0.4210 +0.0700
0.4004 +0.0324	0.4515 −0.0411	0.3299 +0.0394	0.3763 −0.0364	0.4144 +0.0308
0.4040 +0.0299	0.4540 −0.0351	0.3325 +0.0287	0.3795 −0.0271	0.4179 +0.0471
0.4119 +0.0148	0.4644 −0.0253	0.3363 +0.0110	0.3824 −0.0288	
0.4143 +0.0273	0.4671 −0.0401	0.3389 +0.0152	0.3852 −0.0267	
0.4176 +0.0264	0.4695 −0.0127	0.3417 +0.0139	0.3881 −0.0230	

Table 41. Johnson V observations in 1987 in Hungary by M. Paparó for HD 15042 – HD 15228

HD 15042 - HD	0.4176 -0.0022	0.4764 -0.0252	0.3451 -0.0033	0.3881 -0.0020
15228	0.4201 -0.0078	0.4789 $+0.0033$	0.3480 -0.0029	0.3912 -0.0095
2447089 +	0.4224 -0.0153	0.4814 $+0.0124$	0.3512 -0.0069	0.3939 -0.0080
0.3809 -0.0147	0.4248 -0.0325	0.4835 -0.0080	0.3541 -0.0097	0.3979 -0.0023
0.3833 -0.0104	0.4290 -0.0396	0.4861 $+0.0122$	0.3568 -0.0072	0.4006 -0.0005
0.3861 $+0.0126$	0.4314 -0.0274	0.4883 $+0.0216$	0.3621 -0.0016	0.4045 $+0.0048$
0.3895 $+0.0025$	0.4350 -0.0128	0.4907 $+0.0117$	0.3648 -0.0024	0.4082 $+0.0048$
0.3924 -0.0023	0.4376 $+0.0142$	0.4931 $+0.0477$	0.3679 -0.0062	0.4114 $+0.0010$
0.3953 -0.0129	0.4464 $+0.0211$	2447096 +	0.3707 -0.0030	0.4144 $+0.0015$
0.3979 -0.0202	0.4488 -0.0064	0.3299 $+0.0068$	0.3734 -0.0016	0.4179 $+0.0053$
0.4004 -0.0029	0.4515 -0.0253	0.3325 $+0.0028$	0.3763 $+0.0013$	0.4210 $+0.0142$
0.4040 $+0.0091$	0.4620 $+0.0043$	0.3363 -0.0061	0.3795 $+0.0079$	0.4144 $+0.0015$
0.4119 -0.0062	0.4644 $+0.0047$	0.3389 -0.0015	0.3824 $+0.0054$	0.4179 $+0.0054$
0.4143 $+0.0012$	0.4671 -0.0101	0.3417 -0.0008	0.3852 $+0.0017$	

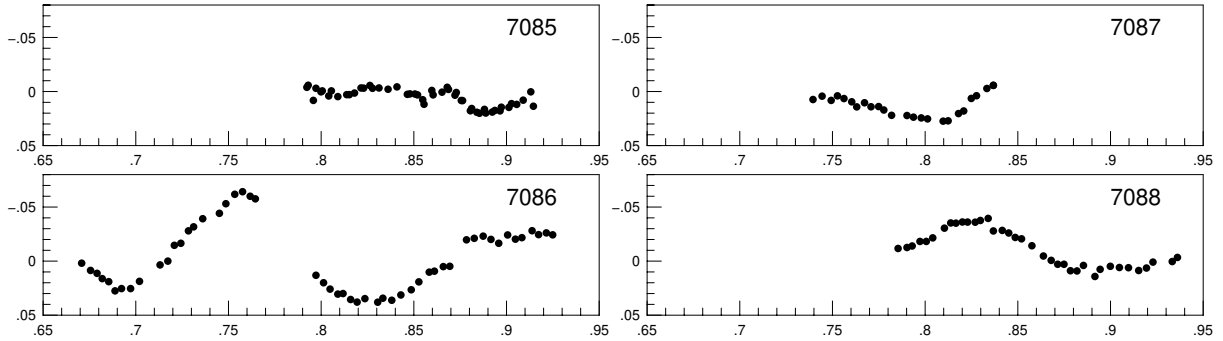


Figure 38: Light curves of Johnson V observations in 1987 in Mexico by J. H. Peña of VW Ari for HD 15466

Table 42. Johnson V observations in 1987 in Mexico by J. H. Peña of VW Ari for HD 15466

VW Ari-HD	0.8090 $+0.0047$	0.8465 $+0.0026$	0.8722 $+0.0034$	0.8937 $+0.0175$
15466	0.8138 $+0.0029$	0.8479 $+0.0022$	0.8729 $+0.0009$	0.8965 $+0.0179$
2447085 +	0.8152 $+0.0029$	0.8506 $+0.0023$	0.8756 $+0.0083$	0.8972 $+0.0145$
0.7923 -0.0039	0.8180 $+0.0014$	0.8520 $+0.0031$	0.8763 $+0.0084$	0.9013 $+0.0147$
0.7930 -0.0058	0.8215 -0.0033	0.8548 $+0.0076$	0.8805 $+0.0178$	0.9027 $+0.0112$
0.7958 $+0.0082$	0.8229 -0.0031	0.8555 $+0.0118$	0.8812 $+0.0157$	0.9055 $+0.0119$
0.7972 -0.0030	0.8263 -0.0056	0.8597 -0.0010	0.8840 $+0.0192$	0.9090 $+0.0080$
0.7999 $+0.0003$	0.8277 -0.0030	0.8604 $+0.0031$	0.8854 $+0.0201$	0.9131 $+0.0003$
0.8006 -0.0006	0.8312 -0.0033	0.8652 $+0.0006$	0.8881 $+0.0165$	0.9145 $+0.0136$
0.8041 $+0.0041$	0.8361 -0.0021	0.8680 -0.0039	0.8888 $+0.0199$	2447086 +
0.8055 -0.0006	0.8409 -0.0043	0.8687 -0.0019	0.8923 $+0.0190$	0.6708 $+0.0019$

0.6756 +0.0086	0.8048 +0.0259	0.9083 -0.0217	0.8124 +0.0271	0.8368 -0.0279
0.6791 +0.0113	0.8090 +0.0305	0.9138 -0.0281	0.8180 +0.0204	0.8416 -0.0284
0.6819 +0.0162	0.8118 +0.0300	0.9173 -0.0245	0.8208 +0.0180	0.8451 -0.0260
0.6854 +0.0190	0.8159 +0.0355	0.9215 -0.0261	0.8249 +0.0064	0.8486 -0.0219
0.6888 +0.0275	0.8194 +0.0379	0.9249 -0.0243	0.8277 +0.0039	0.8520 -0.0206
0.6923 +0.0254	0.8236 +0.0347	2447087 +	0.8333 -0.0028	0.8576 -0.0142
0.6972 +0.0254	0.8305 +0.0380	0.7395 +0.0074	0.8368 -0.0057	0.8638 -0.0047
0.7020 +0.0187	0.8333 +0.0343	0.7444 +0.0043	0.8368 -0.0057	0.8680 -0.0007
0.7131 +0.0035	0.8381 +0.0362	0.7493 +0.0082	2447088 +	0.8715 +0.0029
0.7173 +0.0000	0.8430 +0.0313	0.7527 +0.0040	0.7854 -0.0117	0.8749 +0.0029
0.7208 -0.0146	0.8486 +0.0265	0.7562 +0.0065	0.7902 -0.0126	0.8784 +0.0089
0.7243 -0.0165	0.8527 +0.0192	0.7604 +0.0095	0.7930 -0.0140	0.8819 +0.0091
0.7284 -0.0280	0.8583 +0.0102	0.7631 +0.0142	0.7972 -0.0182	0.8854 +0.0040
0.7312 -0.0317	0.8611 +0.0093	0.7673 +0.0104	0.8006 -0.0182	0.8916 +0.0142
0.7361 -0.0392	0.8659 +0.0051	0.7708 +0.0141	0.8041 -0.0215	0.8944 +0.0076
0.7451 -0.0442	0.8694 +0.0048	0.7749 +0.0139	0.8104 -0.0305	0.8999 +0.0048
0.7486 -0.0531	0.8784 -0.0197	0.7777 +0.0171	0.8138 -0.0353	0.9048 +0.0059
0.7534 -0.0618	0.8826 -0.0211	0.7819 +0.0220	0.8166 -0.0351	0.9097 +0.0061
0.7576 -0.0642	0.8874 -0.0231	0.7902 +0.0222	0.8201 -0.0362	0.9152 +0.0087
0.7617 -0.0600	0.8916 -0.0201	0.7937 +0.0237	0.8229 -0.0361	0.9194 +0.0064
0.7645 -0.0576	0.8958 -0.0165	0.7979 +0.0244	0.8270 -0.0360	0.9229 +0.0009
0.7972 +0.0131	0.9006 -0.0242	0.8013 +0.0253	0.8298 -0.0376	0.9333 +0.0004
0.8013 +0.0200	0.9048 -0.0203	0.8097 +0.0274	0.8340 -0.0395	0.9361 -0.0034

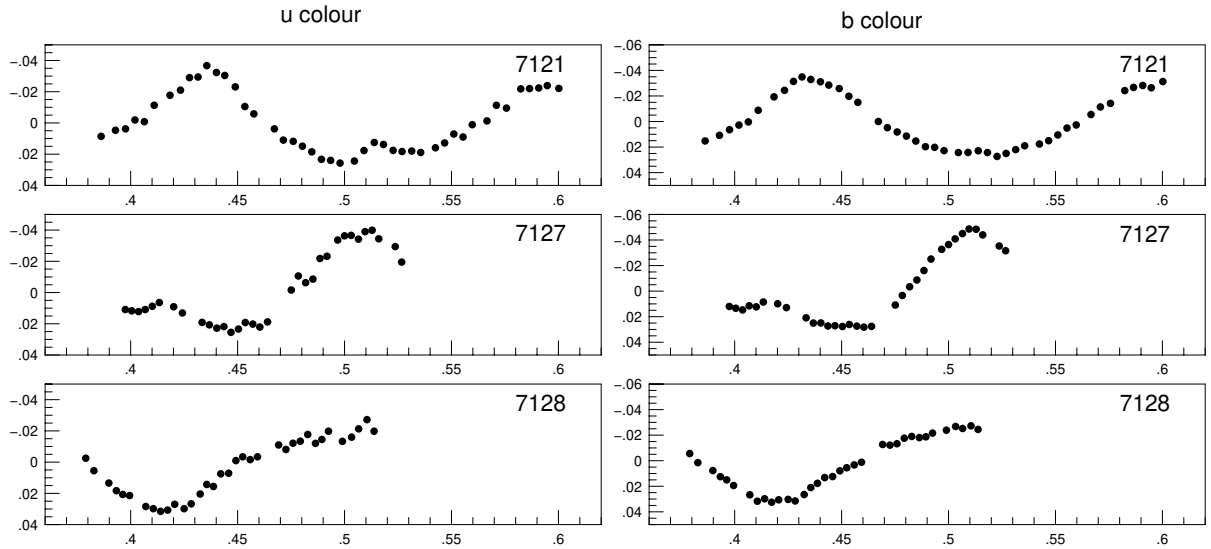


Figure 39: Light curves of Strömgren u , b observations in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

Table 43. Strömgren u observations in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

VW Ari-HD	0.4892 +0.0233	2447127 +	0.4918 -0.0232	0.4325 +0.0204
15466	0.4935 +0.0240	0.3975 +0.0109	0.4968 -0.0336	0.4356 +0.0143
2447121 +	0.4979 +0.0257	0.4005 +0.0117	0.5000 -0.0363	0.4387 +0.0156
0.3862 +0.0086	0.5046 +0.0244	0.4037 +0.0122	0.5031 -0.0366	0.4421 +0.0075
0.3929 +0.0047	0.5091 +0.0177	0.4068 +0.0109	0.5065 -0.0342	0.4458 +0.0071
0.3976 +0.0038	0.5139 +0.0125	0.4101 +0.0088	0.5096 -0.0390	0.4492 -0.0010
0.4020 -0.0019	0.5182 +0.0138	0.4134 +0.0064	0.5129 -0.0399	0.4524 -0.0034
0.4064 -0.0008	0.5227 +0.0176	0.4201 +0.0091	0.5160 -0.0344	0.4559 -0.0016
0.4110 -0.0113	0.5269 +0.0183	0.4242 +0.0131	0.5237 -0.0294	0.4593 -0.0034
0.4184 -0.0177	0.5314 +0.0180	0.4334 +0.0191	0.5267 -0.0195	0.4692 -0.0110
0.4233 -0.0210	0.5356 +0.0189	0.4368 +0.0207	2447128 +	0.4726 -0.0081
0.4275 -0.0290	0.5425 +0.0159	0.4403 +0.0228	0.3790 -0.0025	0.4759 -0.0121
0.4315 -0.0294	0.5468 +0.0128	0.4436 +0.0218	0.3828 +0.0055	0.4793 -0.0134
0.4356 -0.0367	0.5511 +0.0071	0.4469 +0.0255	0.3898 +0.0134	0.4828 -0.0177
0.4401 -0.0323	0.5554 +0.0090	0.4504 +0.0234	0.3933 +0.0183	0.4864 -0.0120
0.4440 -0.0304	0.5597 +0.0011	0.4536 +0.0192	0.3963 +0.0207	0.4894 -0.0145
0.4489 -0.0231	0.5666 -0.0013	0.4571 +0.0202	0.3995 +0.0214	0.4925 -0.0198
0.4534 -0.0105	0.5710 -0.0113	0.4604 +0.0221	0.4071 +0.0284	0.4990 -0.0133
0.4576 -0.0058	0.5757 -0.0095	0.4640 +0.0188	0.4106 +0.0298	0.5033 -0.0160
0.4672 +0.0038	0.5824 -0.0218	0.4751 -0.0016	0.4140 +0.0315	0.5066 -0.0213
0.4714 +0.0110	0.5865 -0.0220	0.4784 -0.0106	0.4173 +0.0307	0.5105 -0.0272
0.4760 +0.0118	0.5908 -0.0224	0.4818 -0.0063	0.4206 +0.0270	0.5138 -0.0198
0.4803 +0.0149	0.5948 -0.0239	0.4852 -0.0086	0.4250 +0.0298	
0.4847 +0.0185	0.6002 -0.0221	0.4885 -0.0218	0.4283 +0.0267	

Table 44. Strömgren b observations in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

VW Ari-HD	0.4489 -0.0258	0.5269 +0.0250	2447127 +	0.4571 +0.0274
15466	0.4534 -0.0198	0.5314 +0.0220	0.3975 +0.0120	0.4604 +0.0282
2447121 +	0.4576 -0.0150	0.5356 +0.0190	0.4005 +0.0134	0.4640 +0.0276
0.3862 +0.0152	0.4672 +0.0000	0.5425 +0.0176	0.4037 +0.0147	0.4751 +0.0109
0.3929 +0.0108	0.4714 +0.0048	0.5468 +0.0150	0.4068 +0.0115	0.4784 +0.0034
0.3976 +0.0064	0.4760 +0.0082	0.5511 +0.0105	0.4101 +0.0123	0.4818 -0.0034
0.4020 +0.0028	0.4803 +0.0114	0.5554 +0.0051	0.4134 +0.0085	0.4852 -0.0087
0.4064 +0.0003	0.4847 +0.0153	0.5597 +0.0027	0.4201 +0.0099	0.4885 -0.0161
0.4110 -0.0088	0.4892 +0.0197	0.5666 -0.0055	0.4242 +0.0129	0.4918 -0.0251
0.4184 -0.0193	0.4935 +0.0202	0.5710 -0.0114	0.4334 +0.0209	0.4968 -0.0327
0.4233 -0.0244	0.4979 +0.0228	0.5757 -0.0142	0.4368 +0.0250	0.5000 -0.0364
0.4275 -0.0314	0.5046 +0.0243	0.5824 -0.0242	0.4403 +0.0249	0.5031 -0.0409
0.4315 -0.0349	0.5091 +0.0242	0.5865 -0.0267	0.4436 +0.0273	0.5065 -0.0450
0.4356 -0.0329	0.5139 +0.0229	0.5908 -0.0282	0.4469 +0.0271	0.5096 -0.0486
0.4401 -0.0311	0.5182 +0.0243	0.5948 -0.0264	0.4504 +0.0277	0.5129 -0.0484
0.4440 -0.0285	0.5227 +0.0273	0.6002 -0.0313	0.4536 +0.0261	0.5160 -0.0440

0.5237 -0.0353	0.3995 +0.0194	0.4325 +0.0265	0.4593 +0.0012	0.4925 -0.0216
0.5267 -0.0316	0.4071 +0.0267	0.4356 +0.0210	0.4692 -0.0127	0.4990 -0.0239
2447128 +	0.4106 +0.0317	0.4387 +0.0177	0.4726 -0.0122	0.5033 -0.0268
0.3790 -0.0056	0.4140 +0.0298	0.4421 +0.0132	0.4759 -0.0133	0.5066 -0.0252
0.3828 +0.0015	0.4173 +0.0325	0.4458 +0.0124	0.4793 -0.0176	0.5105 -0.0273
0.3898 +0.0077	0.4206 +0.0306	0.4492 +0.0079	0.4828 -0.0190	0.5138 -0.0245
0.3933 +0.0125	0.4250 +0.0303	0.4524 +0.0055	0.4864 -0.0181	
0.3963 +0.0150	0.4283 +0.0315	0.4559 +0.0033	0.4894 -0.0187	

Table 45. Strömgren v observations in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

VW	0.4892 +0.0200	2447127 +	0.4918 -0.0257	0.4325 +0.0281
Ari-HD15466	0.4935 +0.0247	0.3975 +0.0157	0.4968 -0.0342	0.4356 +0.0252
2447121 +	0.4979 +0.0262	0.4005 +0.0144	0.5000 -0.0415	0.4387 +0.0204
0.3862 +0.0164	0.5046 +0.0276	0.4037 +0.0133	0.5031 -0.0482	0.4421 +0.0175
0.3929 +0.0151	0.5091 +0.0281	0.4068 +0.0121	0.5065 -0.0531	0.4458 +0.0132
0.3976 +0.0071	0.5139 +0.0256	0.4101 +0.0140	0.5096 -0.0546	0.4492 +0.0082
0.4020 +0.0029	0.5182 +0.0283	0.4134 +0.0098	0.5129 -0.0537	0.4524 +0.0054
0.4064 -0.0039	0.5227 +0.0279	0.4201 +0.0123	0.5160 -0.0512	0.4559 +0.0030
0.4110 -0.0120	0.5269 +0.0283	0.4242 +0.0152	0.5237 -0.0408	0.4593 +0.0006
0.4184 -0.0218	0.5314 +0.0248	0.4334 +0.0210	0.5267 -0.0345	0.4692 -0.0123
0.4233 -0.0270	0.5356 +0.0223	0.4368 +0.0266	2447128 +	0.4726 -0.0135
0.4275 -0.0335	0.5425 +0.0188	0.4403 +0.0268	0.3790 -0.0036	0.4759 -0.0133
0.4315 -0.0374	0.5468 +0.0150	0.4436 +0.0302	0.3828 +0.0029	0.4793 -0.0188
0.4356 -0.0369	0.5511 +0.0101	0.4469 +0.0283	0.3898 +0.0074	0.4828 -0.0208
0.4401 -0.0345	0.5554 +0.0015	0.4504 +0.0328	0.3933 +0.0133	0.4864 -0.0213
0.4440 -0.0306	0.5597 +0.0015	0.4536 +0.0325	0.3963 +0.0157	0.4894 -0.0191
0.4489 -0.0285	0.5666 -0.0098	0.4571 +0.0321	0.3995 +0.0231	0.4925 -0.0243
0.4534 -0.0221	0.5710 -0.0145	0.4604 +0.0322	0.4071 +0.0271	0.4990 -0.0279
0.4576 -0.0175	0.5757 -0.0162	0.4640 +0.0302	0.4106 +0.0361	0.5033 -0.0289
0.4672 -0.0002	0.5824 -0.0259	0.4751 +0.0107	0.4140 +0.0340	0.5066 -0.0284
0.4714 +0.0058	0.5865 -0.0289	0.4784 +0.0040	0.4173 +0.0375	0.5105 -0.0275
0.4760 +0.0078	0.5908 -0.0316	0.4818 -0.0060	0.4206 +0.0343	0.5138 -0.0255
0.4803 +0.0153	0.5948 -0.0276	0.4852 -0.0116	0.4250 +0.0323	
0.4847 +0.0176	0.6002 -0.0343	0.4885 -0.0160	0.4283 +0.0307	

Table 46. Strömgren y observations in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

VW	0.4064 -0.0001	0.4401 -0.0255	0.4760 +0.0117	0.5091 +0.0179
Ari-HD15466	0.4110 -0.0072	0.4440 -0.0226	0.4803 +0.0111	0.5139 +0.0214
2447121 +	0.4184 -0.0172	0.4489 -0.0172	0.4847 +0.0120	0.5182 +0.0192
0.3862 +0.0126	0.4233 -0.0225	0.4534 -0.0182	0.4892 +0.0135	0.5227 +0.0202
0.3929 +0.0078	0.4275 -0.0256	0.4576 -0.0124	0.4935 +0.0130	0.5269 +0.0211
0.3976 +0.0080	0.4315 -0.0286	0.4672 -0.0014	0.4979 +0.0157	0.5314 +0.0172
0.4020 +0.0070	0.4356 -0.0278	0.4714 +0.0063	0.5046 +0.0193	0.5356 +0.0205

0.5425 +0.0120	0.4068 +0.0075	0.4818 -0.0008	0.3933 +0.0108	0.4559 +0.0023
0.5468 +0.0115	0.4101 +0.0084	0.4852 -0.0029	0.3963 +0.0136	0.4593 -0.0045
0.5511 +0.0069	0.4134 +0.0076	0.4885 -0.0121	0.3995 +0.0173	0.4692 -0.0102
0.5554 +0.0032	0.4201 +0.0096	0.4918 -0.0202	0.4071 +0.0215	0.4726 -0.0105
0.5597 +0.0008	0.4242 +0.0095	0.4968 -0.0270	0.4106 +0.0220	0.4759 -0.0150
0.5666 -0.0053	0.4334 +0.0158	0.5000 -0.0300	0.4140 +0.0236	0.4793 -0.0159
0.5710 -0.0098	0.4368 +0.0190	0.5031 -0.0314	0.4173 +0.0248	0.4828 -0.0134
0.5757 -0.0091	0.4403 +0.0179	0.5065 -0.0358	0.4206 +0.0290	0.4864 -0.0137
0.5824 -0.0179	0.4436 +0.0182	0.5096 -0.0403	0.4250 +0.0273	0.4894 -0.0158
0.5865 -0.0237	0.4469 +0.0214	0.5129 -0.0370	0.4283 +0.0280	0.4925 -0.0193
0.5908 -0.0246	0.4504 +0.0233	0.5160 -0.0364	0.4325 +0.0218	0.4990 -0.0186
0.5948 -0.0238	0.4536 +0.0221	0.5237 -0.0275	0.4356 +0.0213	0.5033 -0.0224
0.6002 -0.0261	0.4571 +0.0248	0.5267 -0.0255	0.4387 +0.0166	0.5066 -0.0252
2447127 +	0.4604 +0.0227	2447128 +	0.4421 +0.0142	0.5105 -0.0222
0.3975 +0.0118	0.4640 +0.0225	0.3790 -0.0050	0.4458 +0.0080	0.5138 -0.0208
0.4005 +0.0113	0.4751 +0.0107	0.3828 +0.0020	0.4492 +0.0078	
0.4037 +0.0094	0.4784 +0.0064	0.3898 +0.0053	0.4524 +0.0038	

Table 47. Strömgren b - y values in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

VW Ari-HD	0.4064 +0.0005	0.4401 -0.0055	0.4760 -0.0033	0.5091 +0.0063
15466	0.4110 -0.0015	0.4440 -0.0058	0.4803 +0.0004	0.5139 +0.0016
2447121 +	0.4184 -0.0020	0.4489 -0.0085	0.4847 +0.0034	0.5182 +0.0052
0.3862 +0.0027	0.4233 -0.0018	0.4534 -0.0015	0.4892 +0.0063	0.5227 +0.0072
0.3929 +0.0030	0.4275 -0.0057	0.4576 -0.0025	0.4935 +0.0073	0.5269 +0.0040
0.3976 -0.0015	0.4315 -0.0062	0.4672 +0.0015	0.4979 +0.0071	0.5314 +0.0049
0.4020 -0.0041	0.4356 -0.0050	0.4714 -0.0014	0.5046 +0.0050	0.5356 -0.0014

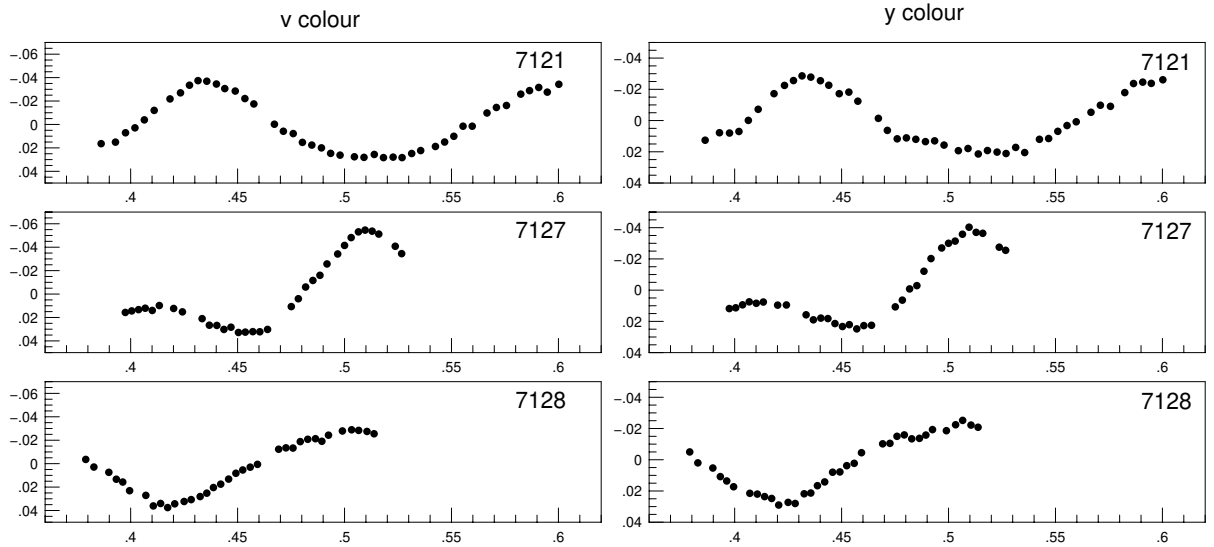


Figure 40: Light curves of Strömgren v , y observations in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

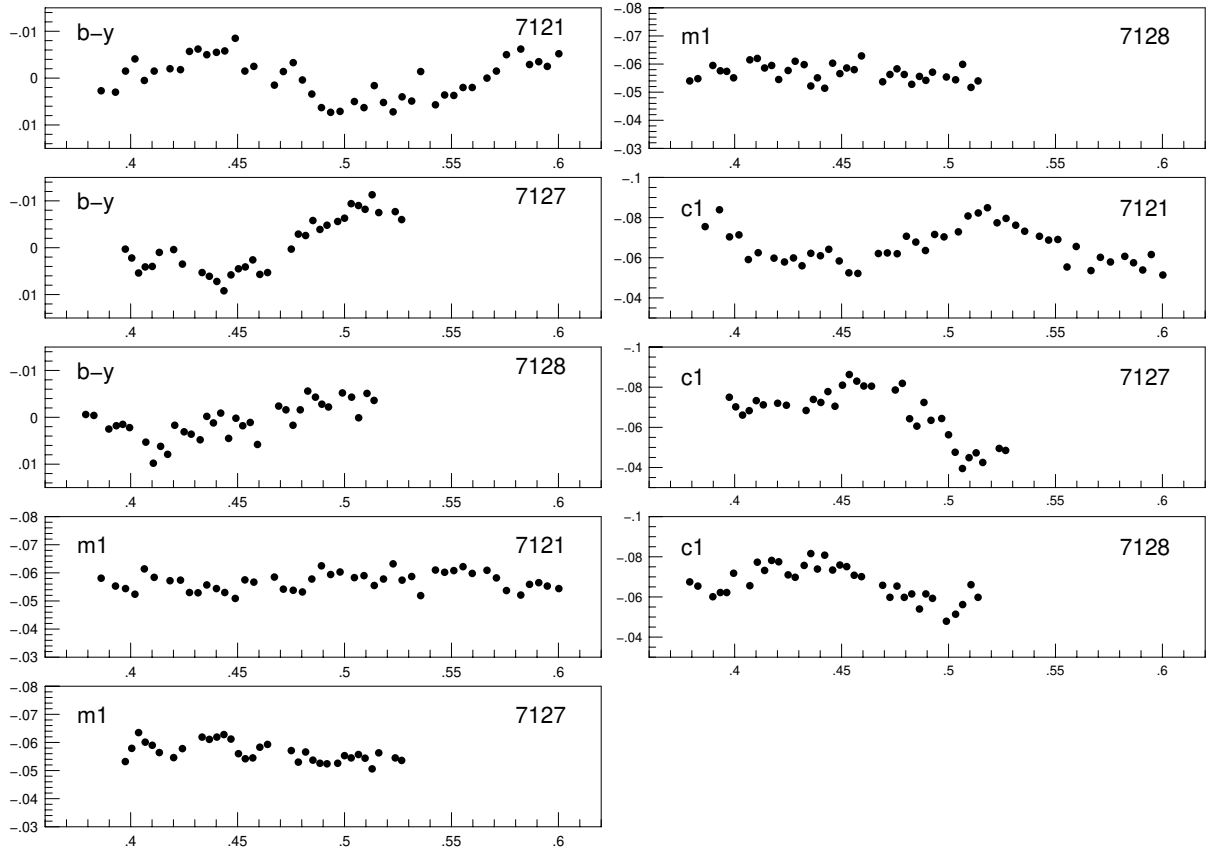


Figure 41: Light curves of Strömrgren $b-y$, m_1 and c_1 values in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

0.5425 +0.0057	0.4068 +0.0041	0.4818 -0.0026	0.3933 +0.0018	0.4559 +0.0011
0.5468 +0.0036	0.4101 +0.0040	0.4852 -0.0058	0.3963 +0.0015	0.4593 +0.0058
0.5511 +0.0037	0.4134 +0.0010	0.4885 -0.0039	0.3995 +0.0022	0.4692 -0.0024
0.5554 +0.0020	0.4201 +0.0004	0.4918 -0.0048	0.4071 +0.0053	0.4726 -0.0016
0.5597 +0.0020	0.4242 +0.0035	0.4968 -0.0056	0.4106 +0.0098	0.4759 +0.0017
0.5666 +0.0000	0.4334 +0.0053	0.5000 -0.0063	0.4140 +0.0062	0.4793 -0.0016
0.5710 -0.0015	0.4368 +0.0061	0.5031 -0.0094	0.4173 +0.0079	0.4828 -0.0056
0.5757 -0.0050	0.4403 +0.0072	0.5065 -0.0090	0.4206 +0.0017	0.4864 -0.0043
0.5824 -0.0062	0.4436 +0.0092	0.5096 -0.0082	0.4250 +0.0031	0.4894 -0.0028
0.5865 -0.0029	0.4469 +0.0058	0.5129 -0.0113	0.4283 +0.0036	0.4925 -0.0022
0.5908 -0.0035	0.4504 +0.0045	0.5160 -0.0075	0.4325 +0.0048	0.4990 -0.0052
0.5948 -0.0025	0.4536 +0.0041	0.5237 -0.0077	0.4356 -0.0002	0.5033 -0.0043
0.6002 -0.0052	0.4571 +0.0026	0.5267 -0.0060	0.4387 +0.0012	0.5066 +0.0001
2447127 +	0.4604 +0.0057	2447128 +	0.4421 -0.0009	0.5105 -0.0051
0.3975 +0.0003	0.4640 +0.0053	0.3790 -0.0006	0.4458 +0.0045	0.5138 -0.0036
0.4005 +0.0022	0.4751 +0.0003	0.3828 -0.0004	0.4492 +0.0002	
0.4037 +0.0054	0.4784 -0.0029	0.3898 +0.0025	0.4524 +0.0018	

Table 48. Strömgren m_1 values in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

VW Ari-HD	0.4892 -0.0625	2447127 +	0.4918 -0.0524	0.4325 -0.0598
15466	0.4935 -0.0594	0.3975 -0.0532	0.4968 -0.0526	0.4356 -0.0522
2447121 +	0.4979 -0.0603	0.4005 -0.0579	0.5000 -0.0553	0.4387 -0.0551
0.3862 -0.0581	0.5046 -0.0583	0.4037 -0.0635	0.5031 -0.0545	0.4421 -0.0514
0.3929 -0.0553	0.5091 -0.0590	0.4068 -0.0601	0.5065 -0.0557	0.4458 -0.0603
0.3976 -0.0544	0.5139 -0.0555	0.4101 -0.0590	0.5096 -0.0544	0.4492 -0.0566
0.4020 -0.0524	0.5182 -0.0578	0.4134 -0.0564	0.5129 -0.0506	0.4524 -0.0586
0.4064 -0.0614	0.5227 -0.0632	0.4201 -0.0546	0.5160 -0.0563	0.4559 -0.0580
0.4110 -0.0584	0.5269 -0.0574	0.4242 -0.0578	0.5237 -0.0545	0.4593 -0.0629
0.4184 -0.0572	0.5314 -0.0587	0.4334 -0.0619	0.5267 -0.0536	0.4692 -0.0537
0.4233 -0.0574	0.5356 -0.0519	0.4368 -0.0611	2447128 +	0.4726 -0.0563
0.4275 -0.0530	0.5425 -0.0610	0.4403 -0.0619	0.3790 -0.0540	0.4759 -0.0583
0.4315 -0.0529	0.5468 -0.0602	0.4436 -0.0628	0.3828 -0.0548	0.4793 -0.0563
0.4356 -0.0557	0.5511 -0.0608	0.4469 -0.0612	0.3898 -0.0595	0.4828 -0.0528
0.4401 -0.0544	0.5554 -0.0622	0.4504 -0.0560	0.3933 -0.0576	0.4864 -0.0556
0.4440 -0.0530	0.5597 -0.0598	0.4536 -0.0542	0.3963 -0.0574	0.4894 -0.0542
0.4489 -0.0509	0.5666 -0.0609	0.4571 -0.0545	0.3995 -0.0551	0.4925 -0.0571
0.4534 -0.0575	0.5710 -0.0582	0.4604 -0.0583	0.4071 -0.0615	0.4990 -0.0554
0.4576 -0.0567	0.5757 -0.0537	0.4640 -0.0593	0.4106 -0.0620	0.5033 -0.0544
0.4672 -0.0585	0.5824 -0.0521	0.4751 -0.0571	0.4140 -0.0586	0.5066 -0.0599
0.4714 -0.0542	0.5865 -0.0559	0.4784 -0.0530	0.4173 -0.0595	0.5105 -0.0517
0.4760 -0.0538	0.5908 -0.0565	0.4818 -0.0566	0.4206 -0.0545	0.5138 -0.0540
0.4803 -0.0532	0.5948 -0.0553	0.4852 -0.0537	0.4250 -0.0577	
0.4847 -0.0578	0.6002 -0.0544	0.4885 -0.0526	0.4283 -0.0610	

Table 49. Strömgren c_1 values in 1987 in Spain by E. Rodríguez of VW Ari for HD 15466

VW Ari-HD	0.4489 -0.0584	0.5269 -0.0796	2447127 +	0.4571 -0.0830
15466	0.4534 -0.0525	0.5314 -0.0762	0.3975 -0.0750	0.4604 -0.0806
2447121 +	0.4576 -0.0522	0.5356 -0.0732	0.4005 -0.0702	0.4640 -0.0805
0.3862 -0.0755	0.4672 -0.0621	0.5425 -0.0707	0.4037 -0.0661	0.4751 -0.0786
0.3929 -0.0839	0.4714 -0.0624	0.5468 -0.0688	0.4068 -0.0683	0.4784 -0.0819
0.3976 -0.0704	0.4760 -0.0620	0.5511 -0.0691	0.4101 -0.0733	0.4818 -0.0643
0.4020 -0.0714	0.4803 -0.0707	0.5554 -0.0554	0.4134 -0.0712	0.4852 -0.0606
0.4064 -0.0591	0.4847 -0.0678	0.5597 -0.0656	0.4201 -0.0720	0.4885 -0.0724
0.4110 -0.0625	0.4892 -0.0636	0.5666 -0.0536	0.4242 -0.0710	0.4918 -0.0635
0.4184 -0.0598	0.4935 -0.0716	0.5710 -0.0602	0.4334 -0.0684	0.4968 -0.0644
0.4233 -0.0579	0.4979 -0.0704	0.5757 -0.0579	0.4368 -0.0739	0.5000 -0.0563
0.4275 -0.0599	0.5046 -0.0729	0.5824 -0.0607	0.4403 -0.0724	0.5031 -0.0476
0.4315 -0.0560	0.5091 -0.0808	0.5865 -0.0575	0.4436 -0.0778	0.5065 -0.0395
0.4356 -0.0622	0.5139 -0.0823	0.5908 -0.0539	0.4469 -0.0705	0.5096 -0.0449
0.4401 -0.0610	0.5182 -0.0849	0.5948 -0.0616	0.4504 -0.0810	0.5129 -0.0473
0.4440 -0.0642	0.5227 -0.0774	0.6002 -0.0514	0.4536 -0.0863	0.5160 -0.0425

0.5237 −0.0495	0.3995 −0.0718	0.4325 −0.0757	0.4593 −0.0701	0.4925 −0.0593
0.5267 −0.0485	0.4071 −0.0656	0.4356 −0.0816	0.4692 −0.0658	0.4990 −0.0479
2447128 +	0.4106 −0.0773	0.4387 −0.0739	0.4726 −0.0598	0.5033 −0.0514
0.3790 −0.0675	0.4140 −0.0732	0.4421 −0.0808	0.4759 −0.0654	0.5066 −0.0562
0.3828 −0.0654	0.4173 −0.0782	0.4458 −0.0734	0.4793 −0.0598	0.5105 −0.0661
0.3898 −0.0601	0.4206 −0.0775	0.4492 −0.0759	0.4828 −0.0615	0.5138 −0.0598
0.3933 −0.0622	0.4250 −0.0710	0.4524 −0.0751	0.4864 −0.0540	
0.3963 −0.0622	0.4283 −0.0698	0.4559 −0.0708	0.4894 −0.0615	

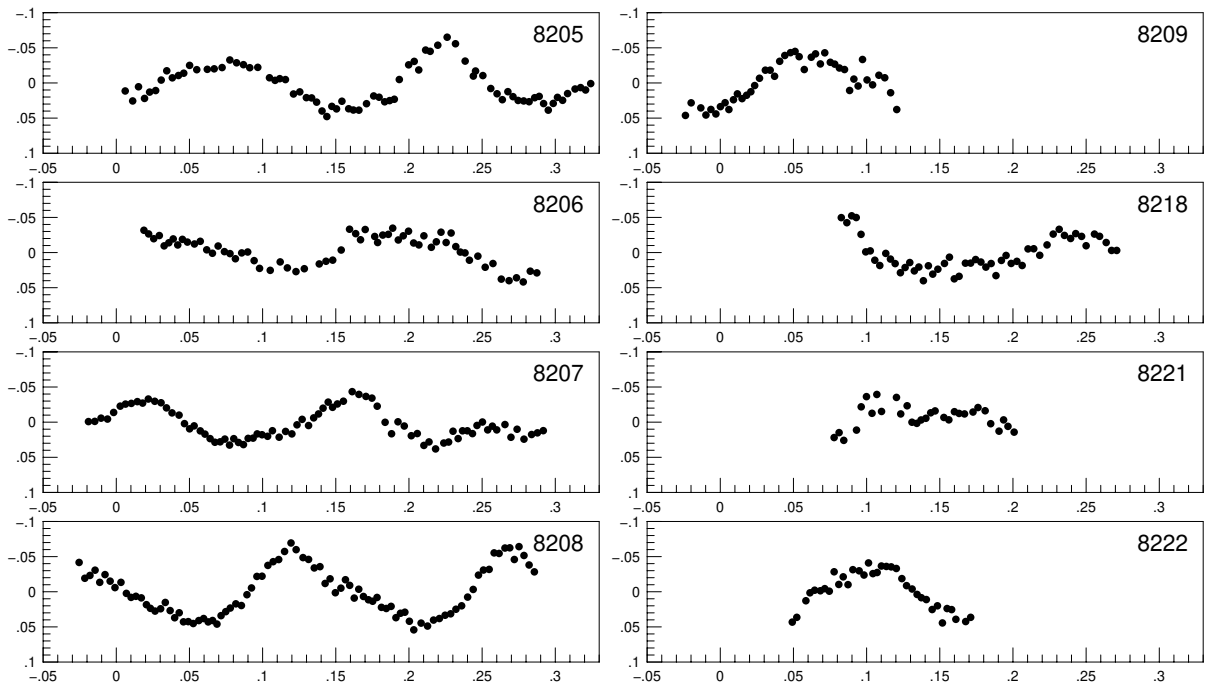


Figure 42: Light curves of Johnson V observations in 1990 in China by Y. Y. Liu and M. Cao for VW Ari to HD 15228

Table 50. Johnson V observations for VW Ari to HD 15228 in 1990 in China by Y. Y. Liu and M. Cao

VW Ari-HD	0.0307 −0.0041	0.0723 −0.0219	0.1156 −0.0048	0.1505 +0.0369
15228	0.0345 −0.0173	0.0776 −0.0327	0.1211 +0.0157	0.1542 +0.0260
2448205 +	0.0383 −0.0073	0.0822 −0.0287	0.1254 +0.0127	0.1588 +0.0367
0.0061 +0.0114	0.0425 −0.0106	0.0869 −0.0260	0.1299 +0.0209	0.1620 +0.0385
0.0112 +0.0256	0.0461 −0.0139	0.0912 −0.0217	0.1335 +0.0213	0.1658 +0.0387
0.0152 +0.0054	0.0501 −0.0250	0.0967 −0.0222	0.1369 +0.0273	0.1710 +0.0295
0.0193 +0.0220	0.0550 −0.0189	0.1047 −0.0074	0.1406 +0.0399	0.1759 +0.0185
0.0228 +0.0130	0.0622 −0.0194	0.1085 −0.0037	0.1439 +0.0478	0.1796 +0.0203
0.0269 +0.0108	0.0669 −0.0201	0.1117 −0.0061	0.1473 +0.0333	0.1834 +0.0268

0.1868 +0.0251	0.0574 -0.0160	0.2631 +0.0378	0.1314 +0.0048	0.9958 -0.0151
0.1900 +0.0232	0.0618 -0.0039	0.2684 +0.0400	0.1349 -0.0061	0.9991 -0.0059
0.1934 -0.0049	0.0657 +0.0010	0.2735 +0.0359	0.1382 -0.0117	2448208 +
0.1998 -0.0258	0.0696 -0.0093	0.2781 +0.0418	0.1413 -0.0199	0.0032 -0.0134
0.2036 -0.0307	0.0739 -0.0013	0.2829 +0.0265	0.1448 -0.0285	0.0069 +0.0023
0.2067 -0.0185	0.0777 +0.0015	0.2874 +0.0289	0.1478 -0.0211	0.0101 +0.0080
0.2114 -0.0468	0.0814 +0.0088	0.9810 -0.0008	0.1511 -0.0259	0.0134 +0.0065
0.2145 -0.0450	0.0857 +0.0005	0.9853 -0.0011	0.1552 -0.0298	0.0171 +0.0087
0.2197 -0.0537	0.0898 -0.0008	0.9896 -0.0057	0.1612 -0.0434	0.0206 +0.0184
0.2261 -0.0651	0.0942 +0.0115	0.9940 -0.0044	0.1658 -0.0395	0.0233 +0.0236
0.2318 -0.0558	0.0979 +0.0225	0.9982 -0.0138	0.1706 -0.0366	0.0265 +0.0275
0.2384 -0.0311	0.1052 +0.0253	2448207 +	0.1747 -0.0342	0.0303 +0.0242
0.2440 -0.0098	0.1120 +0.0133	0.0027 -0.0228	0.1783 -0.0227	0.0335 +0.0152
0.2455 -0.0170	0.1169 +0.0218	0.0063 -0.0257	0.1837 +0.0002	0.0368 +0.0268
0.2505 -0.0105	0.1228 +0.0271	0.0103 -0.0267	0.1881 +0.0165	0.0399 +0.0370
0.2559 +0.0079	0.1285 +0.0230	0.0144 -0.0292	0.1925 -0.0005	0.0430 +0.0299
0.2602 +0.0154	0.1387 +0.0162	0.0180 -0.0271	0.1968 +0.0055	0.0459 +0.0428
0.2638 +0.0238	0.1433 +0.0124	0.0219 -0.0329	0.2016 +0.0193	0.0492 +0.0425
0.2676 +0.0124	0.1479 +0.0108	0.0263 -0.0297	0.2057 +0.0162	0.0526 +0.0452
0.2711 +0.0195	0.1537 -0.0036	0.0306 -0.0276	0.2102 +0.0331	0.0564 +0.0410
0.2746 +0.0249	0.1594 -0.0332	0.0343 -0.0203	0.2137 +0.0281	0.0597 +0.0381
0.2784 +0.0256	0.1636 -0.0269	0.0381 -0.0132	0.2182 +0.0381	0.0628 +0.0429
0.2821 +0.0267	0.1669 -0.0182	0.0429 -0.0100	0.2238 +0.0297	0.0658 +0.0409
0.2859 +0.0210	0.1701 -0.0328	0.0466 +0.0021	0.2271 +0.0283	0.0688 +0.0460
0.2890 +0.0191	0.1766 -0.0229	0.0501 +0.0095	0.2301 +0.0129	0.0716 +0.0340
0.2920 +0.0293	0.1786 -0.0143	0.0532 +0.0053	0.2336 +0.0234	0.0748 +0.0283
0.2952 +0.0387	0.1821 -0.0249	0.0574 +0.0124	0.2366 +0.0123	0.0779 +0.0232
0.2986 +0.0291	0.1859 -0.0259	0.0606 +0.0170	0.2399 +0.0123	0.0817 +0.0172
0.3015 +0.0205	0.1889 -0.0347	0.0641 +0.0234	0.2434 +0.0163	0.0855 +0.0196
0.3050 +0.0247	0.1927 -0.0179	0.0674 +0.0286	0.2465 +0.0047	0.0893 +0.0042
0.3084 +0.0151	0.1961 -0.0238	0.0710 +0.0280	0.2502 -0.0002	0.0924 -0.0054
0.3135 +0.0086	0.1997 -0.0304	0.0742 +0.0241	0.2538 +0.0110	0.0961 -0.0218
0.3173 +0.0066	0.2032 -0.0136	0.0774 +0.0326	0.2570 +0.0057	0.0996 -0.0221
0.3207 +0.0100	0.2068 -0.0109	0.0803 +0.0235	0.2600 +0.0110	0.1036 -0.0375
0.3242 +0.0009	0.2102 -0.0238	0.0835 +0.0289	0.2656 +0.0034	0.1072 -0.0428
2448206 +	0.2153 -0.0075	0.0869 +0.0319	0.2697 +0.0215	0.1110 -0.0458
0.0189 -0.0317	0.2187 -0.0153	0.0901 +0.0231	0.2739 +0.0101	0.1150 -0.0573
0.0221 -0.0265	0.2219 -0.0290	0.0935 +0.0227	0.2786 +0.0242	0.1194 -0.0694
0.0256 -0.0197	0.2254 -0.0143	0.0963 +0.0167	0.2838 +0.0176	0.1229 -0.0599
0.0294 -0.0242	0.2288 -0.0278	0.0996 +0.0179	0.2878 +0.0152	0.1276 -0.0486
0.0327 -0.0095	0.2320 -0.0085	0.1034 +0.0201	0.2918 +0.0121	0.1314 -0.0460
0.0359 -0.0139	0.2351 -0.0007	0.1067 +0.0122	0.9746 -0.0417	0.1353 -0.0339
0.0389 -0.0194	0.2383 +0.0005	0.1113 +0.0214	0.9785 -0.0192	0.1392 -0.0357
0.0420 -0.0108	0.2413 +0.0109	0.1157 +0.0132	0.9820 -0.0232	0.1427 -0.0118
0.0452 -0.0188	0.2471 +0.0051	0.1200 +0.0167	0.9855 -0.0307	0.1461 -0.0184
0.0486 -0.0149	0.2521 +0.0209	0.1235 +0.0038	0.9887 -0.0134	0.1497 +0.0014
0.0534 -0.0122	0.2574 +0.0156	0.1270 -0.0040	0.9923 -0.0244	0.1535 -0.0051

0.1566 −0.0171	0.9902 +0.0456	2448218 +	0.2233 −0.0109	0.1905 +0.0128
0.1595 −0.0091	0.9936 +0.0377	0.0827 −0.0497	0.2275 −0.0263	0.1936 −0.0032
0.1626 +0.0090	0.9970 +0.0441	0.0865 −0.0425	0.2316 −0.0331	0.1966 +0.0060
0.1657 −0.0036	2448209 +	0.0898 −0.0523	0.2352 −0.0244	0.2008 +0.0142
0.1689 +0.0067	0.0001 +0.0337	0.0929 −0.0498	0.2394 −0.0200	2448222 +
0.1723 +0.0114	0.0033 +0.0281	0.0962 −0.0259	0.2429 −0.0270	0.0492 +0.0432
0.1752 +0.0135	0.0059 +0.0378	0.0994 −0.0010	0.2469 −0.0230	0.0523 +0.0364
0.1782 +0.0081	0.0090 +0.0239	0.1025 −0.0024	0.2500 −0.0097	0.0585 +0.0128
0.1812 +0.0222	0.0117 +0.0155	0.1056 +0.0109	0.2557 −0.0263	0.0613 +0.0015
0.1845 +0.0238	0.0149 +0.0223	0.109 +0.0184	0.2592 −0.0231	0.0645 −0.0022
0.1878 +0.0208	0.0180 +0.0175	0.1131 +0.0012	0.2637 −0.0143	0.0684 −0.0014
0.1911 +0.0369	0.0209 +0.0125	0.1163 +0.0093	0.2674 −0.0030	0.0714 −0.0044
0.1942 +0.0306	0.0235 +0.0037	0.1195 +0.0157	0.2709 −0.0030	0.0745 −0.0008
0.1972 +0.0291	0.0268 −0.0067	0.1231 +0.0287	2448221 +	0.0778 −0.0284
0.2003 +0.0420	0.0308 −0.0182	0.1263 +0.0213	0.0778 +0.0219	0.0810 −0.0104
0.2033 +0.0542	0.0341 −0.0182	0.1295 +0.0142	0.0812 +0.0149	0.0840 −0.0212
0.2083 +0.0446	0.0371 −0.0095	0.1326 +0.0261	0.0844 +0.0259	0.0873 −0.0101
0.2127 +0.0488	0.0406 −0.0308	0.1357 +0.0206	0.0931 +0.0113	0.0906 −0.0314
0.2168 +0.0403	0.0441 −0.0391	0.1388 +0.0401	0.0963 −0.0218	0.0949 −0.0298
0.2208 +0.0381	0.0480 −0.0431	0.1422 +0.0188	0.0999 −0.0363	0.0982 −0.0238
0.2247 +0.0334	0.0511 −0.0449	0.1452 +0.0307	0.1037 −0.0126	0.1013 −0.0410
0.2285 +0.0314	0.0539 −0.0374	0.1487 +0.0237	0.1070 −0.0394	0.1043 −0.0258
0.2321 +0.0249	0.0574 −0.0191	0.1532 +0.0155	0.1102 −0.0152	0.1072 −0.0274
0.2360 +0.0200	0.0622 −0.0366	0.1566 +0.0066	0.1204 −0.0352	0.1101 −0.0366
0.2401 +0.0076	0.0651 −0.0414	0.1599 +0.0374	0.1233 −0.0117	0.1135 −0.0360
0.2439 −0.0033	0.0684 −0.0271	0.1632 +0.0338	0.1277 −0.0233	0.1168 −0.0354
0.2475 −0.0237	0.0714 −0.0429	0.1675 +0.0151	0.1310 +0.0001	0.1203 −0.0331
0.2509 −0.0309	0.0752 −0.0294	0.1711 +0.0150	0.1343 +0.0017	0.1241 −0.0187
0.2548 −0.0318	0.0782 −0.0268	0.1745 +0.0099	0.1372 −0.0031	0.1273 −0.0087
0.2582 −0.0553	0.0814 −0.0213	0.1781 +0.0135	0.1405 −0.0055	0.1311 −0.0039
0.2616 −0.0545	0.0849 −0.0191	0.1815 +0.0207	0.1438 −0.0133	0.1345 +0.0038
0.2656 −0.0622	0.0884 +0.0107	0.1851 +0.0156	0.1468 −0.0160	0.1374 +0.0085
0.2689 −0.0625	0.0913 −0.0055	0.1884 +0.0328	0.1528 −0.0067	0.1408 +0.0111
0.2720 −0.0459	0.0942 +0.0043	0.1921 +0.0112	0.1562 −0.0033	0.1448 +0.0253
0.2752 −0.0642	0.0972 −0.0334	0.1953 +0.0041	0.1600 −0.0149	0.1484 +0.0200
0.2786 −0.0516	0.1003 −0.0043	0.1988 +0.0155	0.1632 −0.0124	0.1518 +0.0444
0.2821 −0.0381	0.1041 +0.0027	0.2027 +0.0125	0.1669 −0.0117	0.1550 +0.0239
0.2857 −0.0283	0.1084 −0.0110	0.2063 +0.0184	0.1727 −0.0144	0.1581 +0.0254
0.9762 +0.0462	0.1124 −0.0074	0.2103 −0.0052	0.1761 −0.0208	0.1610 +0.0392
0.9801 +0.0283	0.1164 +0.0139	0.2142 −0.0054	0.1810 −0.0162	0.1677 +0.0424
0.9867 +0.0355	0.1206 +0.0378	0.2183 +0.0039	0.1848 +0.0022	0.1711 +0.0364

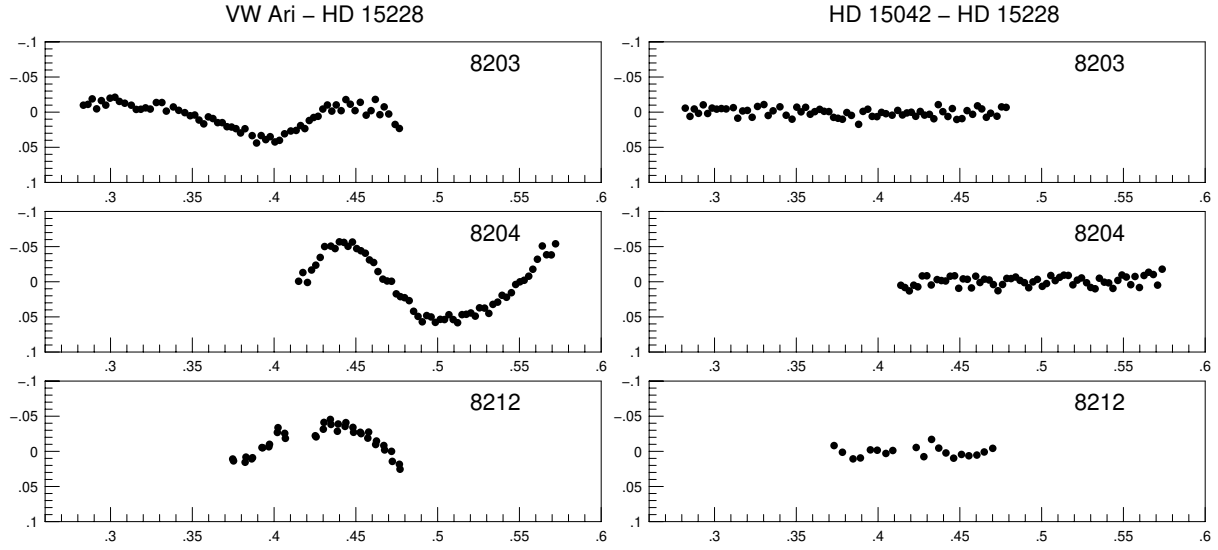


Figure 43: Light curves of Johnson V observations in 1990 in Hungary by M. Paparó of VW Ari – HD 15228 and HD 15042 – HD 15228

Table 51. Johnson V observations in 1990 in Hungary by M. Paparó of VW Ari for HD 15228

VW Ari-HD	0.3454 +0.0007	0.4135 +0.0260	2448204 +	0.4747 +0.0172
15228	0.3487 +0.0051	0.4162 +0.0191	0.4150 -0.0007	0.4772 +0.0212
2448203 +	0.3515 +0.0041	0.4188 +0.0234	0.4176 -0.0131	0.4798 +0.0227
0.2834 -0.0099	0.3541 +0.0112	0.4215 +0.0119	0.4204 +0.0010	0.4826 +0.0269
0.2862 -0.0111	0.3570 +0.0167	0.4242 +0.0076	0.4229 -0.0167	0.4853 +0.0420
0.2888 -0.0189	0.3598 +0.0067	0.4269 +0.0059	0.4255 -0.0236	0.4880 +0.0493
0.2915 -0.0047	0.3626 +0.0091	0.4298 -0.0044	0.4282 -0.0346	0.4906 +0.0570
0.2944 -0.0164	0.3655 +0.0149	0.4326 -0.0102	0.4309 -0.0501	0.4933 +0.0481
0.2971 -0.0100	0.3683 +0.0149	0.4353 -0.0015	0.4347 -0.0507	0.4960 +0.0501
0.2997 -0.0199	0.3712 +0.0207	0.4380 -0.0103	0.4373 -0.0472	0.4986 +0.0578
0.3027 -0.0212	0.3740 +0.0212	0.4410 -0.0021	0.4399 -0.0568	0.5016 +0.0535
0.3054 -0.0153	0.3767 +0.0235	0.4439 -0.0179	0.4427 -0.0560	0.5042 +0.0538
0.3087 -0.0127	0.3795 +0.0296	0.4466 -0.0113	0.4452 -0.0504	0.5069 +0.0469
0.3127 -0.0099	0.3822 +0.0236	0.4495 -0.0022	0.4479 -0.0565	0.5095 +0.0538
0.3157 -0.0039	0.3866 +0.0334	0.4527 -0.0140	0.4505 -0.0472	0.5122 +0.0583
0.3185 -0.0041	0.3893 +0.0439	0.4563 +0.0043	0.4531 -0.0441	0.5149 +0.0468
0.3214 -0.0061	0.3921 +0.0333	0.4593 -0.0021	0.4558 -0.0406	0.5175 +0.0463
0.3243 -0.0044	0.3949 +0.0391	0.4619 -0.0181	0.4583 -0.0311	0.5203 +0.0444
0.3280 -0.0137	0.3976 +0.0349	0.4647 +0.0036	0.4609 -0.0274	0.5230 +0.0489
0.3314 -0.0137	0.4005 +0.0424	0.4673 -0.0075	0.4635 -0.0145	0.5256 +0.0371
0.3341 -0.0015	0.4033 +0.0401	0.4701 +0.0026	0.4665 -0.0037	0.5287 +0.0375
0.3384 -0.0074	0.4064 +0.0308	0.4740 +0.0175	0.4691 -0.0011	0.5313 +0.0450
0.3417 -0.0026	0.4102 +0.0268	0.4766 +0.0232	0.4718 -0.0007	0.5338 +0.0322

0.5367 +0.0290	0.5666 -0.0384	0.3930 -0.0051	0.4344 -0.0454	0.4578 -0.0274
0.5394 +0.0193	0.5695 -0.0382	0.3968 -0.0065	0.4348 -0.0383	0.4621 -0.0097
0.5421 +0.0221	0.5721 -0.0540	0.3972 -0.0100	0.4387 -0.0286	0.4626 -0.0147
0.5451 +0.0156	2448212 +	0.4020 -0.0269	0.4392 -0.0389	0.4671 -0.0083
0.5477 +0.0039	0.3747 +0.0109	0.4024 -0.0337	0.4434 -0.0355	0.4676 -0.0020
0.5503 +0.0001	0.3752 +0.0136	0.4065 -0.0256	0.4439 -0.0409	0.4718 +0.0000
0.5529 -0.0021	0.3823 +0.0155	0.4069 -0.0185	0.4482 -0.0341	0.4723 +0.0143
0.5557 -0.0079	0.3828 +0.0082	0.4252 -0.0222	0.4486 -0.0271	0.4766 +0.0184
0.5582 -0.0178	0.3863 +0.0107	0.4257 -0.0206	0.4527 -0.0271	0.4770 +0.0254
0.5610 -0.0320	0.3868 +0.0091	0.4301 -0.0315	0.4532 -0.0252	
0.5640 -0.0509	0.3926 -0.0054	0.4305 -0.0412	0.4573 -0.0188	

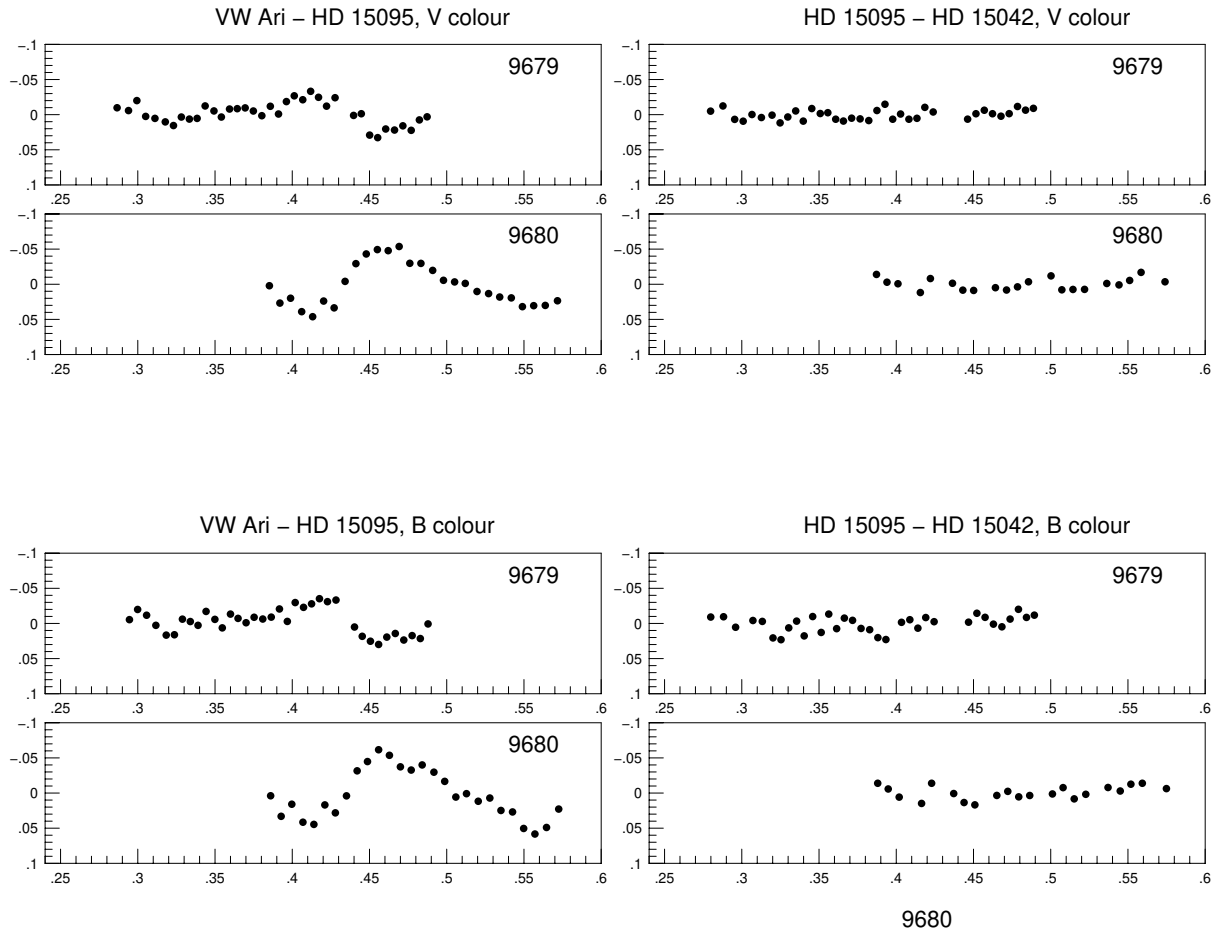


Figure 44: Light curves of Johnson V and B observations in 1994 in Hungary by M. Paparó of VW Ari – HD 15095 and HD 15095 – HD 15042

Table 52. Johnson V observations in 1990 in Hungary by M. Paparó of HD 15042 – HD 15228

HD 15042-HD	0.2821 -0.0057	0.2902 +0.0017	0.2985 -0.0058	0.3071 -0.0046
15228	0.2850 +0.0060	0.2931 -0.0104	0.3013 -0.0043	0.3115 -0.0064
2448203 +	0.2876 -0.0045	0.2958 +0.0019	0.3042 -0.0051	0.3142 +0.0086

0.3172 -0.0017	0.4021 +0.0003	0.4139 +0.0050	0.4895 +0.0013	0.5654 -0.0135
0.3201 -0.0025	0.4048 +0.0022	0.4164 +0.0082	0.4921 +0.0085	0.5683 -0.0103
0.3230 +0.0073	0.4086 +0.0043	0.4191 +0.0130	0.4947 +0.0002	0.5709 +0.0048
0.3263 -0.0081	0.4120 -0.0025	0.4218 +0.0049	0.4974 -0.0034	0.5737 -0.0179
0.3302 -0.0108	0.4149 +0.0040	0.4243 +0.0072	0.5004 +0.0065	24458212 +
0.3328 +0.0048	0.4176 +0.0011	0.4270 -0.0083	0.5030 +0.0026	0.3731 -0.0082
0.3358 -0.0019	0.4203 +0.0001	0.4298 -0.0085	0.5056 -0.0089	0.3782 +0.0013
0.3400 -0.0076	0.4230 +0.0059	0.4325 +0.0046	0.5083 -0.0016	0.3847 +0.0107
0.3438 +0.0044	0.4258 -0.0010	0.4361 -0.0031	0.5110 -0.0063	0.3892 +0.0094
0.3474 +0.0100	0.4284 +0.0042	0.4387 -0.0017	0.5136 -0.0094	0.3953 -0.0021
0.3503 -0.0071	0.4314 +0.0031	0.4413 -0.0011	0.5163 -0.0090	0.3995 -0.0016
0.3529 -0.0004	0.4341 +0.0094	0.4441 -0.0079	0.5191 +0.0044	0.4048 +0.0030
0.3557 -0.0069	0.4368 -0.0107	0.4468 -0.0085	0.5218 -0.0023	0.4090 -0.0012
0.3585 +0.0030	0.4396 -0.0007	0.4493 +0.0093	0.5244 -0.0054	0.4233 -0.0055
0.3613 -0.0007	0.4427 +0.0062	0.4520 -0.0041	0.5275 +0.0014	0.428 +0.0076
0.3643 -0.0040	0.4454 -0.0051	0.4546 -0.0035	0.5300 +0.0081	0.4327 -0.0170
0.3670 -0.0012	0.4481 +0.0104	0.4571 +0.0088	0.5327 +0.0100	0.4371 -0.0046
0.3699 -0.0008	0.4513 +0.0092	0.4597 -0.0079	0.5353 -0.0050	0.4415 +0.0023
0.3728 +0.0074	0.4544 -0.0022	0.4623 +0.0011	0.5383 +0.0006	0.4462 +0.0097
0.3755 +0.0087	0.4578 +0.0031	0.4650 -0.0037	0.5410 +0.0016	0.4510 +0.0044
0.3782 +0.0101	0.4608 -0.0090	0.4679 -0.0025	0.5436 +0.0095	0.4555 +0.0063
0.3809 +0.0005	0.4634 -0.0046	0.4705 +0.0040	0.5466 -0.0019	0.4604 +0.0053
0.3837 +0.0046	0.4662 +0.0073	0.4733 +0.0128	0.5491 -0.0096	0.4649 +0.0009
0.3881 +0.0173	0.4688 +0.0015	0.4761 +0.0039	0.5518 -0.0067	0.4701 -0.0043
0.3908 -0.0011	0.4727 +0.0058	0.4787 -0.0048	0.5545 +0.0042	
0.3937 -0.0042	0.4755 -0.0075	0.4813 -0.0045	0.5571 -0.0075	
0.3964 +0.0060	0.4783 -0.0068	0.4841 -0.0067	0.5598 +0.0082	
0.3993 +0.0064	2448204 +	0.4868 -0.0019	0.5626 -0.0089	

Table 53. Johnson *V* observations in 1994 in Hungary by M. Paparó of VW Ari for HD 15095

VW Ari-HD	0.3493 -0.0053	0.4222 -0.0121	0.3920 +0.0268	0.4909 -0.0197
15095	0.3541 +0.0034	0.4277 -0.0241	0.3989 +0.0199	0.4979 -0.0056
2449679 +	0.3594 -0.0080	0.4397 +0.0011	0.4061 +0.0390	0.5051 -0.0033
0.2866 -0.0098	0.3644 -0.0085	0.4447 -0.0013	0.4132 +0.0462	0.5120 -0.0012
0.2940 -0.0058	0.3695 -0.0096	0.4501 +0.0291	0.4203 +0.0239	0.5196 +0.0103
0.2994 -0.0200	0.3748 -0.0052	0.4553 +0.0327	0.4271 +0.0336	0.5271 +0.0133
0.3051 +0.0025	0.3803 +0.0015	0.4605 +0.0204	0.4342 -0.0041	0.5343 +0.0182
0.3111 +0.0053	0.3858 -0.0119	0.4662 +0.0219	0.4412 -0.0293	0.5418 +0.0194
0.3178 +0.0103	0.3911 -0.0009	0.4716 +0.0159	0.4479 -0.0431	0.5490 +0.0319
0.3231 +0.0155	0.3962 -0.0186	0.4770 +0.0223	0.4551 -0.0493	0.5563 +0.0305
0.3282 +0.0034	0.4013 -0.0268	0.4823 +0.0075	0.4621 -0.0478	0.5638 +0.0301
0.3334 +0.0063	0.4068 -0.0212	0.4873 +0.0031	0.4692 -0.0537	0.5717 +0.0235
0.3384 +0.0053	0.4119 -0.0332	2449680 +	0.4761 -0.0298	
0.3436 -0.0124	0.4170 -0.0247	0.3852 +0.0021	0.4833 -0.0297	

Table 54. Johnson V observations in 1994 in Hungary by M. Paparó of HD 15095 – HD 15042

HD	0.3398 +0.0092	0.4082 +0.0065	2449680 +	0.5002 -0.0119
15095-HD15042	0.3453 -0.0087	0.4134 +0.0052	0.3872 -0.0140	0.5072 +0.0079
2449679 +	0.3508 -0.0016	0.4185 -0.0104	0.3940 -0.0029	0.5144 +0.0074
0.2798 -0.0050	0.3557 -0.0028	0.4239 -0.0038	0.4011 -0.0007	0.5219 +0.0073
0.2878 -0.0124	0.3608 +0.0065	0.4462 +0.0064	0.4156 +0.0118	0.5363 -0.0011
0.2954 +0.0067	0.3658 +0.0091	0.4516 -0.0013	0.4221 -0.0081	0.5442 +0.0009
0.3009 +0.0093	0.3711 +0.0050	0.4570 -0.0063	0.4364 -0.0014	0.5511 -0.0054
0.3066 -0.0002	0.3766 +0.0060	0.4623 -0.0013	0.4431 +0.0084	0.5585 -0.0169
0.3127 +0.0041	0.3822 +0.0084	0.4678 +0.0022	0.4501 +0.0088	0.5740 -0.0035
0.3196 +0.0007	0.3875 -0.0059	0.4731 -0.0014	0.4642 +0.0049	
0.3248 +0.0117	0.3927 -0.0148	0.4785 -0.0116	0.4714 +0.0082	
0.3298 +0.0033	0.3977 +0.0065	0.4837 -0.0064	0.4785 +0.0037	
0.3349 -0.0053	0.4028 -0.0009	0.4888 -0.0090	0.4856 -0.0035	

Table 55. Johnson B observations in 1994 in Hungary by M. Paparó of VW Ari for HD 15095

VW Ari-HD	0.3547 +0.0063	0.4283 -0.0333	0.3997 +0.0159	0.4987 -0.0166
15095	0.3600 -0.0133	0.4403 +0.0051	0.4069 +0.0415	0.5059 +0.0057
2449679 +	0.3649 -0.0072	0.4453 +0.0183	0.4140 +0.0446	0.5128 +0.0009
0.2946 -0.0054	0.3701 -0.0010	0.4506 +0.0253	0.4211 +0.0169	0.5204 +0.0117
0.2999 -0.0199	0.3753 -0.0088	0.4559 +0.0299	0.4279 +0.0282	0.5279 +0.0071
0.3057 -0.0117	0.3809 -0.0063	0.4612 +0.0194	0.4351 +0.0040	0.5351 +0.0248
0.3117 +0.0027	0.3864 -0.0090	0.4667 +0.0143	0.4420 -0.0316	0.5426 +0.0269
0.3184 +0.0166	0.3917 -0.0206	0.4722 +0.0236	0.4487 -0.0448	0.5498 +0.0504
0.3237 +0.0161	0.3968 -0.0029	0.4776 +0.0173	0.4559 -0.0616	0.5571 +0.0583
0.3289 -0.0061	0.4019 -0.0297	0.4829 +0.0215	0.4629 -0.0537	0.5646 +0.0490
0.3340 -0.0027	0.4073 -0.0229	0.4879 +0.0007	0.4700 -0.0373	0.5725 +0.0228
0.3390 +0.0027	0.4125 -0.0279	2449680 +	0.4770 -0.0327	
0.3442 -0.0171	0.4176 -0.0352	0.3860 +0.0039	0.4841 -0.0400	
0.3499 -0.0058	0.4228 -0.0310	0.3928 +0.0331	0.4917 -0.0297	

Table 56. Johnson B observations in 1994 in Hungary by M. Paparó of HD 15095 – HD 15042

HD	0.3304 +0.0063	0.3828 +0.0089	0.4575 -0.0087	0.4019 +0.0058
15095-15042	0.3355 -0.0033	0.3881 +0.0202	0.4629 +0.0010	0.4164 +0.0148
2449679 +	0.3404 +0.0177	0.3933 +0.0229	0.4684 +0.0048	0.4229 -0.0139
0.2799 -0.0091	0.3459 -0.0098	0.4034 -0.0016	0.4737 -0.0062	0.4372 +0.0007
0.2882 -0.0095	0.3514 +0.0128	0.4088 -0.0053	0.4791 -0.0201	0.4439 +0.0135
0.2960 +0.0054	0.3563 -0.0133	0.4140 +0.0067	0.4843 -0.0086	0.4509 +0.0168
0.3072 -0.0042	0.3614 +0.0074	0.4191 -0.0084	0.4894 -0.0118	0.4651 +0.0034
0.3133 -0.0029	0.3664 -0.0076	0.4245 -0.0025	2449680 +	0.4722 -0.0024
0.3202 +0.0206	0.3717 -0.0044	0.4468 -0.0018	0.3880 -0.0139	0.4793 +0.0054
0.3254 +0.0231	0.3772 +0.0071	0.4522 -0.0145	0.3948 -0.0058	0.4864 +0.0035

0.5011 +0.0013 0.5152 +0.0083 0.5371 −0.0079 0.5519 −0.0126 0.5749 −0.0063
0.5080 −0.0077 0.5227 +0.0018 0.5450 −0.0029 0.5593 −0.0139

These huge ground-based observations could be a good starting point to follow the investigation on this binary system. Especially, since there are very nice observations of VW Ari by TESS in sector 42 and 43. Regarding also the early observation of McMillan et al. (1976), Rucinski (1978), Percy (1980) and McNamara (1984) the timebase is rather long for any stability analysis. Probably additional stellar parameters are given by Gaia. The archived file is VW Ari.arch for VW Ari (Table 37, 38, 39, 42, 43(u), 44(b), 45(v), 46(y), 47(b-y), 48(m1), 49(c1), 50, 51, 53, 55). The archived files for the comparison stars are HD15042–HD15228.arch (Table 41 and 52) and HD15095–HD15042.arch (Table 54 and 56).

θ Tuc

Two reasons motivated me for the observation of θ Tucanae, a δ Scuti star on the Southern hemisphere. Partly, the case of VW Ari proved that only a long multisite campaign on sites with the best astronomical climate could guarantee the success for a serious analysis. On the other hand, the previous stars in this publication showed that the amplitude variability is widely observed in δ Scuti stars and a final solution is a great challenge.

One of the most distinguished example of any proof was published for θ Tuc by Stobie & Shobbrook (1976). The amplitude variability was so definite that D. Kurtz started extensive observations to prove or to disprove it (Kurtz 1980). The dominant frequency proved to be excited with stable amplitude, but the variability could not be proved for many other frequencies. According to the conclusion, the amplitude variability is caused by the beating of closely spaced frequencies. It was clear that the beating cannot be resolved by a single site observation. Since I found signs of amplitude variability in other stars in my earlier work, I became highly interested in working on the resolution of amplitude variation of θ Tuc. I applied and got telescope time at Sutherland, the astronomical station of South African Astronomical Observatory, Cape Town (SAAO).

Table 57. Journal of the Australian observations.

Date (UT)	HJD 2400000+	Filter
24 Sep 1993	49255	V
25 Sep 1993	49256	V
27 Sep 1993	49258	V
28 Sep 1993	49259	V

To get a long continuous dataset I organised a multisite observation for θ Tuc. Three sites were included at Perth, Australia (observer P. V. Birch), at La Silla, Chile (observers C. Sterken and H. Spoon) and at Sutherland, South Afrika (observer M. Paparó, as a guest). The journal of the Australian and South-African observations are given in Figs 57 and 58. Three papers were published on the campaign data: Paparó et al, (1996, Paper

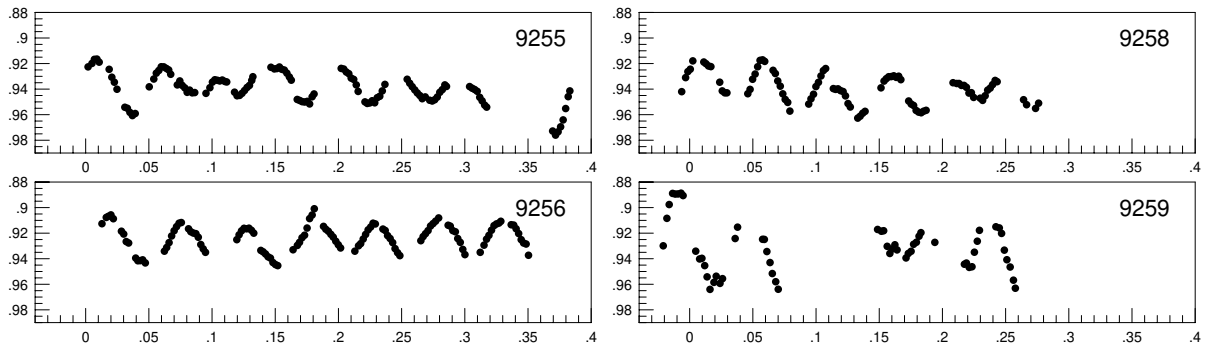
Table 58. Journal of the South-African observations.

Date (UT)	HJD 2400000+	Filter
24 Sep 1993	49255	b,y
1 Oct 1993	49262	b,y
2 Oct 1993	49263	b,y
3 Oct 1993	49264	b,y
6 Oct 1993	49267	b,y
7 Oct 1993	49268	b,y
9 Oct 1993	49270	b,y
10 Oct 1993	49271	b,y
11 Oct 1993	49272	b,y
12 Oct 1993	49273	b,y
13 Oct 1993	49274	b,y
14 Oct 1993	49275	b,y

I), Sterken (1997, Paper II), Paparó & Sterken (2000, Paper III). In the last paper we came to the conclusion that the amplitude of the excited modes are stable, but frequencies with regular spacing were found. Especially three frequencies with 1 cycle/day spacing were important, providing an amplitude variability that was impossible to resolve from the single site observation of D. Kurtz. That was the first case when I recognized regular arrangement of the excited modes in a δ Scuti star.

The data were not published at the date of the publications of the papers. Later the Chilean data were independently published by those who observed in Chile (Sterken & Spoon, 2017).

Up to now the Australian and South-African observations have not been published. Here we present them for the astronomical community for further investigation. The Australian observations are shown in Fig. 45 and the data are listed in Table 59. The

**Figure 45:** Light curves of the Australian observations.

space-born data (*Kepler*, TESS, Plato) with long enough timebase and precise continuous observations could give more details for the pulsation of θ Tucanae.

The details of the observations are given in Paper I. Two comparison stars C1=HR 83 and C2=HR 169 were observed in each observing cycle. The data were reduced for the mean value of the two comparison stars. The constancy of the comparison stars and the mean light level of θ Tuc was so carefully investigated that a periodicity was found in the star's mean light level with 3.56 or 7.04 days period. Although the θ Tuc was a well-behaving single δ Scuti star according to the catalogue, the periodic mean-light level variation raised the binary nature of the star based only on photometric observations. Photometry is not generally used for discovering the binary behaviour, but in this case the long, continuous and extremely precise observations served as a good base. Of course, the binary nature was also confirmed by spectroscopy (De Mey, Daems & Sterken, 1998).

Table 59. Australian Johnson V observations shifted to the Chilean mean value.

θ Tuc—	.0843 0.9429	.1733 0.9501	.2762 0.9483	.0396 0.9395
(HR83+HR169)/2	.0863 0.9427	.1753 0.9496	.2782 0.9462	.0413 0.9416
2449255 +	.0952 0.9433	.1772 0.9516	.2802 0.9425	.0433 0.9415
.0019 0.9226	.0983 0.9389	.1792 0.9460	.2822 0.9404	.0451 0.9409
.0050 0.9199	.1003 0.9345	.1807 0.9438	.2842 0.9367	.0472 0.9433
.0069 0.9167	.1022 0.9327	.2022 0.9238	.2855 0.9379	.0623 0.9341
.0089 0.9165	.1042 0.9331	.2042 0.9243	.3038 0.9380	.0641 0.9312
.0107 0.9189	.1061 0.9336	.2062 0.9266	.3058 0.9393	.0660 0.9274
.0186 0.9245	.1081 0.9329	.2082 0.9279	.3078 0.9403	.0680 0.9222
.0207 0.9307	.1101 0.9340	.2101 0.9314	.3098 0.9417	.0700 0.9181
.0227 0.9346	.1116 0.9344	.2121 0.9324	.3118 0.9464	.0719 0.9149
.0248 0.9401	.1178 0.9424	.2141 0.9367	.3137 0.9492	.0739 0.9122
.0310 0.9542	.1198 0.9452	.2156 0.9418	.3157 0.9525	.0757 0.9117
.0330 0.9550	.1218 0.9449	.2210 0.9500	.3173 0.9541	.0814 0.9166
.0350 0.9582	.1237 0.9433	.2228 0.9512	.3695 0.9728	.0832 0.9189
.0370 0.9607	.1257 0.9411	.2248 0.9508	.3718 0.9760	.0852 0.9199
.0392 0.9591	.1277 0.9387	.2267 0.9491	.3738 0.9734	.0872 0.9204
.0503 0.9382	.1296 0.9371	.2287 0.9507	.3758 0.9695	.0891 0.9232
.0539 0.9321	.1314 0.9332	.2307 0.9467	.3778 0.9641	.0911 0.9289
.0559 0.9275	.1323 0.9303	.2327 0.9456	.3798 0.9552	.0930 0.9323
.0579 0.9254	.1466 0.9229	.2347 0.9414	.3818 0.9459	.0948 0.9350
.0598 0.9225	.1493 0.9242	.2368 0.9363	.3831 0.9414	.1196 0.9251
.0618 0.9226	.1513 0.9239	.2544 0.9323	2449256 +	.1214 0.9213
.0638 0.9238	.1533 0.9227	.2564 0.9354	.0129 0.9126	.1233 0.9182
.0657 0.9250	.1552 0.9245	.2584 0.9381	.0163 0.9077	.1253 0.9162
.0673 0.9284	.1572 0.9251	.2604 0.9406	.0180 0.9068	.1273 0.9166
.0725 0.9367	.1592 0.9275	.2624 0.9430	.0200 0.9057	.1292 0.9161
.0745 0.9336	.1612 0.9305	.2644 0.9450	.0219 0.9087	.1312 0.9178
.0764 0.9371	.1627 0.9330	.2663 0.9475	.0283 0.9185	.1330 0.9200
.0784 0.9390	.1674 0.9481	.2687 0.9461	.0301 0.9207	.1386 0.9335
.0803 0.9425	.1694 0.9489	.2722 0.9487	.0321 0.9266	.1404 0.9346
.0823 0.9408	.1713 0.9498	.2742 0.9493	.0340 0.9277	.1423 0.9363

.1443 0.9385	.2749 0.9125	.0478 0.9402	.1733 0.9493	.0192 0.9585
.1462 0.9395	.2769 0.9106	.0498 0.9323	.1753 0.9517	.0210 0.9537
.1482 0.9430	.2793 0.9081	.0518 0.9282	.1772 0.9528	.0240 0.9593
.1502 0.9446	.2868 0.9138	.0538 0.9225	.1792 0.9567	.0260 0.9556
.1520 0.9454	.2885 0.9145	.0557 0.9175	.1812 0.9580	.0360 0.9242
.1641 0.9330	.2905 0.9180	.0577 0.9171	.1832 0.9585	.0379 0.9153
.1675 0.9296	.2925 0.9189	.0594 0.9183	.1851 0.9573	.0577 0.9248
.1692 0.9272	.2944 0.9242	.0660 0.9253	.1871 0.9566	.0591 0.9249
.1712 0.9236	.2964 0.9272	.0678 0.9278	.2084 0.9350	.0611 0.9344
.1732 0.9216	.2984 0.9327	.0697 0.9336	.2113 0.9356	.0636 0.9430
.1752 0.9160	.3001 0.9368	.0717 0.9377	.2131 0.9356	.0654 0.9516
.1772 0.9086	.3122 0.9350	.0737 0.9437	.2151 0.9371	.0681 0.9580
.1792 0.9058	.3152 0.9294	.0756 0.9481	.2171 0.9371	.0701 0.9639
.1809 0.9009	.3172 0.9247	.0776 0.9504	.2190 0.9386	.1487 0.9171
.1882 0.9147	.3191 0.9217	.0793 0.9572	.2210 0.9431	.1517 0.9185
.1900 0.9169	.3211 0.9177	.0942 0.9517	.2229 0.9428	.1535 0.9181
.1920 0.9185	.3231 0.9141	.0960 0.9476	.2247 0.9465	.1563 0.9303
.1940 0.9209	.3250 0.9128	.0980 0.9440	.2299 0.9471	.1584 0.9359
.1959 0.9231	.3270 0.9121	.0999 0.9380	.2318 0.9488	.1602 0.9324
.1979 0.9263	.3285 0.9107	.1019 0.9347	.2338 0.9452	.1624 0.9291
.1999 0.9291	.3367 0.9134	.1039 0.9297	.2358 0.9408	.1641 0.9331
.2017 0.9316	.3387 0.9137	.1058 0.9255	.2378 0.9392	.1712 0.9394
.2130 0.9341	.3406 0.9166	.1076 0.9239	.2397 0.9365	.1730 0.9359
.2159 0.9299	.3426 0.9203	.1137 0.9396	.2417 0.9332	.1752 0.9342
.2176 0.9282	.3446 0.9251	.1155 0.9402	.2433 0.9342	.1772 0.9287
.2196 0.9246	.3465 0.9277	.1174 0.9398	.2642 0.9483	.1794 0.9271
.2215 0.9210	.3485 0.9285	.1194 0.9412	.2666 0.9522	.1815 0.9224
.2235 0.9174	.3504 0.9373	.1214 0.9419	.2737 0.9551	.1830 0.9196
.2255 0.9152	2449257 +	.1233 0.9453	.2761 0.9510	.1940 0.9272
.2274 0.9122	.9937 0.9420	.1253 0.9513	.9791 0.9299	.2174 0.9443
.2292 0.9128	.9968 0.9310	.1271 0.9540	.9820 0.9084	.2190 0.9434
.2352 0.9168	.9986 0.9263	.1330 0.9627	.9838 0.8976	.2212 0.9468
.2370 0.9179	2449258 +	.1349 0.9612	.9865 0.8889	.2234 0.9463
.2389 0.9219	.0005 0.9244	.1369 0.9589	.9886 0.8894	.2253 0.9349
.2409 0.9242	.0025 0.9179	.1388 0.9574	.9909 0.8893	.2276 0.9263
.2429 0.9274	.0112 0.9188	.1514 0.9390	.9932 0.8887	.2293 0.9178
.2448 0.9321	.0129 0.9201	.1538 0.9337	.9948 0.8906	.2423 0.9150
.2468 0.9353	.0149 0.9219	.1556 0.9318	2449259 +	.2450 0.9159
.2486 0.9376	.0168 0.9224	.1575 0.9303	.0048 0.9341	.2468 0.9202
.2652 0.9259	.0238 0.9346	.1595 0.9302	.0079 0.9402	.2490 0.9333
.2670 0.9227	.0258 0.9414	.1615 0.9296	.0097 0.9397	.2510 0.9408
.2689 0.9204	.0278 0.9429	.1634 0.9308	.0119 0.9454	.2536 0.9465
.2709 0.9180	.0295 0.9429	.1654 0.9299	.0138 0.9542	.2562 0.9568
.2729 0.9144	.0460 0.9436	.1671 0.9326	.0161 0.9640	.2577 0.9631

Although part of the observations were done in Johnson V (Australian), we disregard the slight difference between the Johnson V and Strömgren y colours, only the zero point

was shifted to the Chilean mean value (by -0.0125) for getting a homogeneous dataset. The shifted values are presented here in Table 59 and in the archived files.

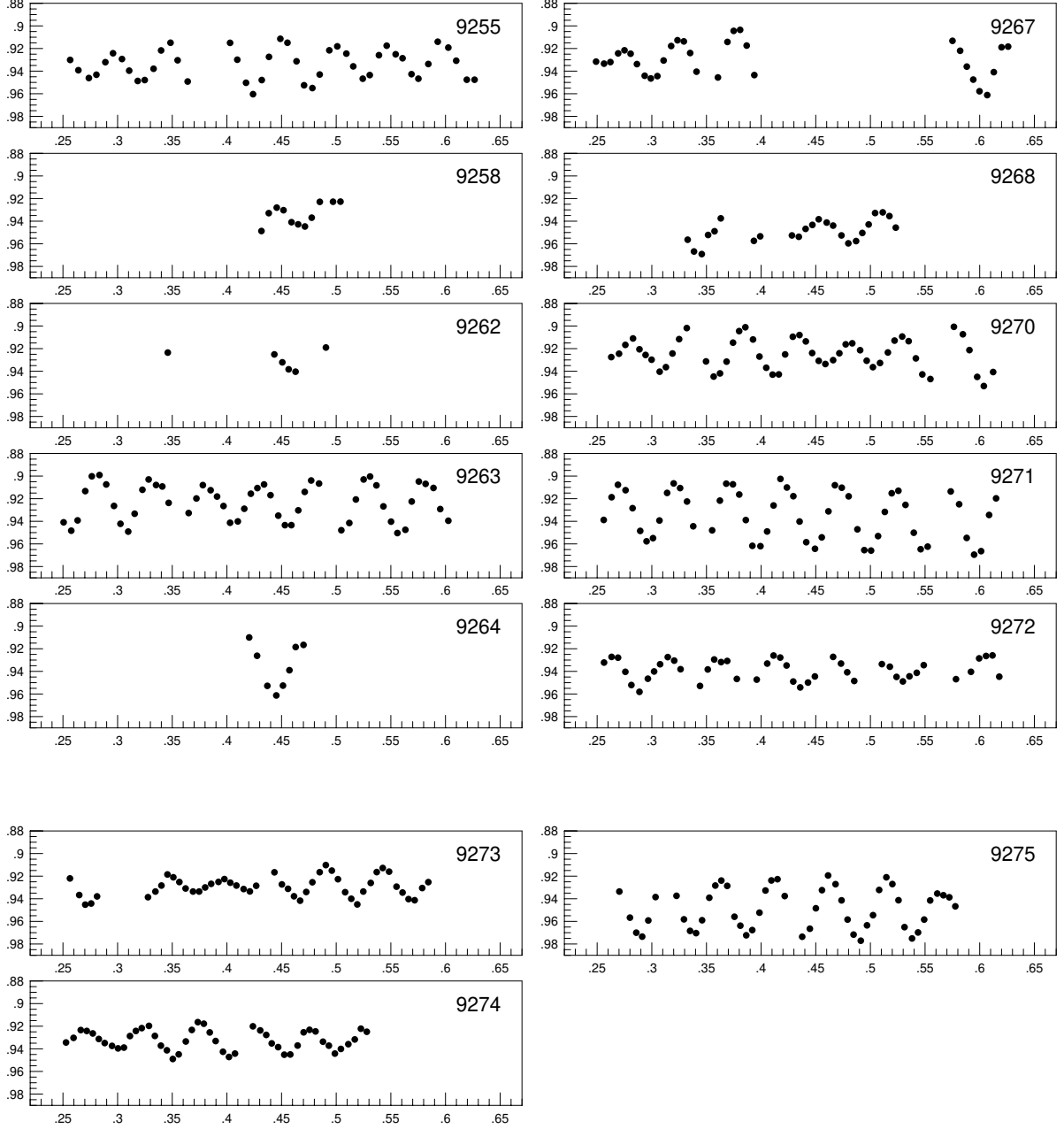


Figure 46: Light curves of SAAO Strömgren y observations obtained at Sutherland by M. Paparó. Light curves represent the differential values of θ Tuc $-(\text{HR83}+\text{HR168})/2$.

The journal of the South-African observations are given in Table 58. The observations were obtained in Strömgren y and b colours. The Strömgren y light curves of South-African observations are given in Figures 46. The data are listed in Table 60.

Table 60. Strömgren y observations obtained at SAAO by M. Paparó

θ Tuc—	.6098 0.9308	.4029 0.9413	.2806 0.9246	.4926 0.9504
(HR83+HR169)/2	.6195 0.9476	.4100 0.9401	.2864 0.9338	.4984 0.9429
2449255+	.6266 0.9476	.4159 0.9289	.2935 0.9441	.5043 0.9328
.2566 0.9301	2449258 +	.4219 0.9156	.2991 0.9465	.5113 0.9322
.2641 0.9392	.4316 0.9487	.4279 0.9106	.3051 0.9444	.5174 0.9355
.2737 0.9461	.4383 0.9329	.4340 0.9074	.3108 0.9306	.5232 0.9457
.2806 0.9432	.4456 0.9280	.4399 0.9169	.3177 0.9178	2449270 +
.2888 0.9321	.4518 0.9303	.4470 0.9350	.3235 0.9127	.2629 0.9275
.2958 0.9242	.4591 0.9409	.4531 0.9434	.3293 0.9137	.2700 0.9245
.3040 0.9293	.4652 0.9428	.4590 0.9434	.3351 0.9240	.2758 0.9167
.3106 0.9396	.4714 0.9447	.4653 0.9303	.3409 0.9405	.2828 0.9110
.3184 0.9487	.4776 0.9369	.4712 0.9140	.3605 0.9456	.2887 0.9206
.3248 0.9479	.4850 0.9229	.4771 0.9039	.3692 0.9142	.2943 0.9256
.3329 0.9379	.4971 0.9228	.4843 0.9066	.3749 0.9044	.2998 0.9298
.3398 0.9217	.5039 0.9227	.5047 0.9479	.3808 0.9035	.3072 0.9404
.3484 0.9149	2449262 +	.5120 0.9415	.3868 0.9174	.3129 0.9364
.3549 0.9304	.3459 0.9235	.5180 0.9207	.3938 0.9435	.3189 0.9243
.3641 0.9492	.4434 0.9251	.5251 0.9030	.5751 0.9132	.3250 0.9116
.4029 0.9150	.4507 0.9321	.5310 0.9004	.5821 0.9220	.3320 0.9018
.4095 0.9299	.4565 0.9383	.5368 0.9082	.5882 0.9360	.3496 0.9313
.4175 0.9503	.4628 0.9404	.5432 0.9268	.5941 0.9475	.3566 0.9447
.4239 0.9604	.4906 0.9190	.5502 0.9403	.5998 0.9578	.3624 0.9419
.4319 0.9479	2449263 +	.5560 0.9504	.6069 0.9612	.3684 0.9315
.4385 0.9274	.2506 0.9409	.5633 0.9475	.6129 0.9409	.3743 0.9147
.4489 0.9114	.2576 0.9483	.5691 0.9225	.6200 0.9189	.3799 0.9045
.4554 0.9149	.2634 0.9392	.5756 0.9048	.6260 0.9183	.3856 0.9011
.4637 0.9313	.2704 0.9133	.5818 0.9069	2449268 +	.3926 0.9119
.4706 0.9525	.2764 0.9002	.5890 0.9105	.3328 0.9564	.3985 0.9270
.4782 0.9550	.2834 0.8991	.5952 0.9292	.3386 0.9668	.4047 0.9369
.4849 0.9430	.2896 0.9074	.6026 0.9395	.3457 0.9691	.4105 0.9430
.4937 0.9216	.2967 0.9264	2449264 +	.3515 0.9522	.4162 0.9428
.5010 0.9181	.3026 0.9422	.4204 0.9100	.3574 0.9489	.4220 0.9251
.5093 0.9245	.3097 0.9491	.4276 0.9262	.3631 0.9375	.4290 0.9095
.5156 0.9358	.3156 0.9333	.4370 0.9528	.3934 0.9574	.4351 0.9080
.5243 0.9467	.3227 0.9121	.4452 0.9613	.3992 0.9534	.4409 0.9136
.5307 0.9435	.3284 0.9030	.4513 0.9526	.4282 0.9526	.4467 0.9239
.5391 0.9259	.3352 0.9079	.4572 0.9390	.4345 0.9538	.4527 0.9308
.5462 0.9175	.3409 0.9092	.4629 0.9185	.4407 0.9468	.4588 0.9336
.5544 0.9251	.3467 0.9237	.4701 0.9166	.4469 0.9433	.4659 0.9302
.5607 0.9286	.3650 0.9327	2449267 +	.4527 0.9383	.4716 0.9241
.5689 0.9427	.3721 0.9198	.2490 0.9316	.4600 0.9412	.4774 0.9162
.5752 0.9467	.3780 0.9080	.2563 0.9334	.4659 0.9439	.4834 0.9153
.5843 0.9337	.3851 0.9125	.2621 0.9320	.4735 0.9526	.4906 0.9214
.5929 0.9140	.3910 0.9181	.2692 0.9243	.4798 0.9596	.4966 0.9307
.6026 0.9192	.3969 0.9265	.2750 0.9216	.4869 0.9576	.5023 0.9364

.5088 0.9327	.4675 0.9081	.4429 0.9499	.4670 0.9417	.3964 0.9426
.5160 0.9234	.4738 0.9103	.4492 0.9445	.4726 0.9340	.4019 0.9472
.5221 0.9129	.4801 0.9179	.4659 0.9272	.4782 0.9254	.4074 0.9442
.5291 0.9093	.4881 0.9471	.4731 0.9331	.4849 0.9165	.4238 0.9201
.5350 0.9134	.4944 0.9655	.4788 0.9408	.4905 0.9102	.4305 0.9237
.5416 0.9286	.5006 0.9659	.4852 0.9485	.4960 0.9151	.4360 0.9277
.5475 0.9428	.5070 0.9531	.5105 0.9336	.5016 0.9227	.4410 0.9352
.5549 0.9469	.5132 0.9317	.5178 0.9359	.5082 0.9342	.4469 0.9385
.5764 0.9007	.5195 0.9152	.5239 0.9449	.5138 0.9400	.4525 0.9452
.5846 0.9073	.5256 0.9130	.5297 0.9489	.5193 0.9450	.4580 0.9450
.5906 0.9213	.5321 0.9255	.5357 0.9444	.5248 0.9336	.4647 0.9371
.5977 0.9450	.5397 0.9501	.5424 0.9413	.5316 0.9260	.4702 0.9254
.6038 0.9531	.5460 0.9647	.5488 0.9345	.5371 0.9164	.4756 0.9232
.6123 0.9407	.5524 0.9624	.5783 0.9469	.5426 0.9128	.4811 0.9246
2449271 +	.5735 0.9136	.5920 0.9404	.5484 0.9160	.4879 0.9337
.2560 0.9388	.5812 0.9249	.5995 0.9285	.5552 0.9293	.4933 0.9372
.2632 0.9187	.5881 0.9547	.6058 0.9264	.5607 0.9345	.4988 0.9442
.2690 0.9077	.5949 0.9695	.6117 0.9259	.5662 0.9403	.5043 0.9401
.2760 0.9125	.6013 0.9664	.6179 0.9447	.5718 0.9413	.5111 0.9359
.2824 0.9284	.6086 0.9344	2449273 +	.5787 0.9305	.5170 0.9317
.2894 0.9485	.6150 0.9197	.2564 0.9220	.5843 0.9253	.5226 0.9222
.2952 0.9577	2449272 +	.2649 0.9367	2449274 +	.5280 0.9249
.3011 0.9549	.2563 0.9322	.2704 0.9452	.2528 0.9344	2449275 +
.3070 0.9393	.2632 0.9272	.2758 0.9442	.2597 0.9303	.2703 0.9336
.3140 0.9149	.2691 0.9279	.2812 0.9379	.2663 0.9234	.2800 0.9567
.3200 0.9065	.2758 0.9404	.3278 0.9386	.2718 0.9242	.2858 0.9700
.3259 0.9106	.2813 0.9521	.3346 0.9336	.2773 0.9264	.2912 0.9735
.3322 0.9225	.2887 0.9581	.3401 0.9283	.2828 0.9313	.2968 0.9592
.3379 0.9444	.2964 0.9465	.3456 0.9185	.2882 0.9349	.3034 0.9385
.3552 0.9480	.3021 0.9401	.3510 0.9210	.2949 0.9374	.3226 0.9374
.3623 0.9217	.3076 0.9337	.3565 0.9252	.3004 0.9396	.3294 0.9582
.3681 0.9067	.3146 0.9274	.3622 0.9309	.3058 0.9389	.3350 0.9684
.3742 0.9073	.3205 0.9305	.3690 0.9336	.3113 0.9287	.3405 0.9704
.3800 0.9163	.3263 0.9381	.3746 0.9336	.3167 0.9242	.3460 0.9590
.3860 0.9389	.3441 0.9529	.3801 0.9300	.3221 0.9217	.3526 0.9391
.3920 0.9617	.3512 0.9383	.3856 0.9268	.3287 0.9197	.3581 0.9283
.3994 0.9620	.3571 0.9295	.3923 0.9251	.3341 0.9286	.3636 0.9239
.4055 0.9490	.3634 0.9318	.3977 0.9226	.3396 0.9372	.3690 0.9286
.4114 0.9260	.3690 0.9308	.4031 0.9258	.3451 0.9413	.3756 0.9559
.4177 0.9025	.3778 0.9467	.4087 0.9283	.3505 0.9490	.3810 0.9638
.4236 0.9101	.3960 0.9473	.4153 0.9314	.3559 0.9449	.3864 0.9723
.4295 0.9178	.4056 0.9331	.4210 0.9335	.3624 0.9335	.3919 0.9677
.4352 0.9402	.4114 0.9260	.4268 0.9285	.3679 0.9233	.3985 0.9523
.4413 0.9585	.4175 0.9278	.4435 0.9166	.3734 0.9164	.4040 0.9327
.4493 0.9643	.4233 0.9348	.4503 0.9273	.3789 0.9178	.4094 0.9238
.4555 0.9542	.4294 0.9490	.4559 0.9312	.3843 0.9255	.4150 0.9227
.4616 0.9312	.4358 0.9542	.4614 0.9378	.3897 0.9331	.4216 0.9376

.4376 0.9736	.4681 0.9271	.4969 0.9635	.5257 0.9413	.5547 0.9415
.4446 0.9665	.4736 0.9414	.5024 0.9545	.5312 0.9651	.5612 0.9354
.4501 0.9484	.4791 0.9584	.5080 0.9322	.5381 0.9751	.5668 0.9369
.4557 0.9324	.4846 0.9717	.5146 0.9210	.5436 0.9698	.5722 0.9387
.4613 0.9194	.4912 0.9771	.5201 0.9270	.5492 0.9584	.5777 0.9467

The b data are listed in Table 61, while the Strömgren b light curves are also shown in Figure 47. We also calculated the b - y values. These are in Table 62. The corresponding figure is Fig 48.

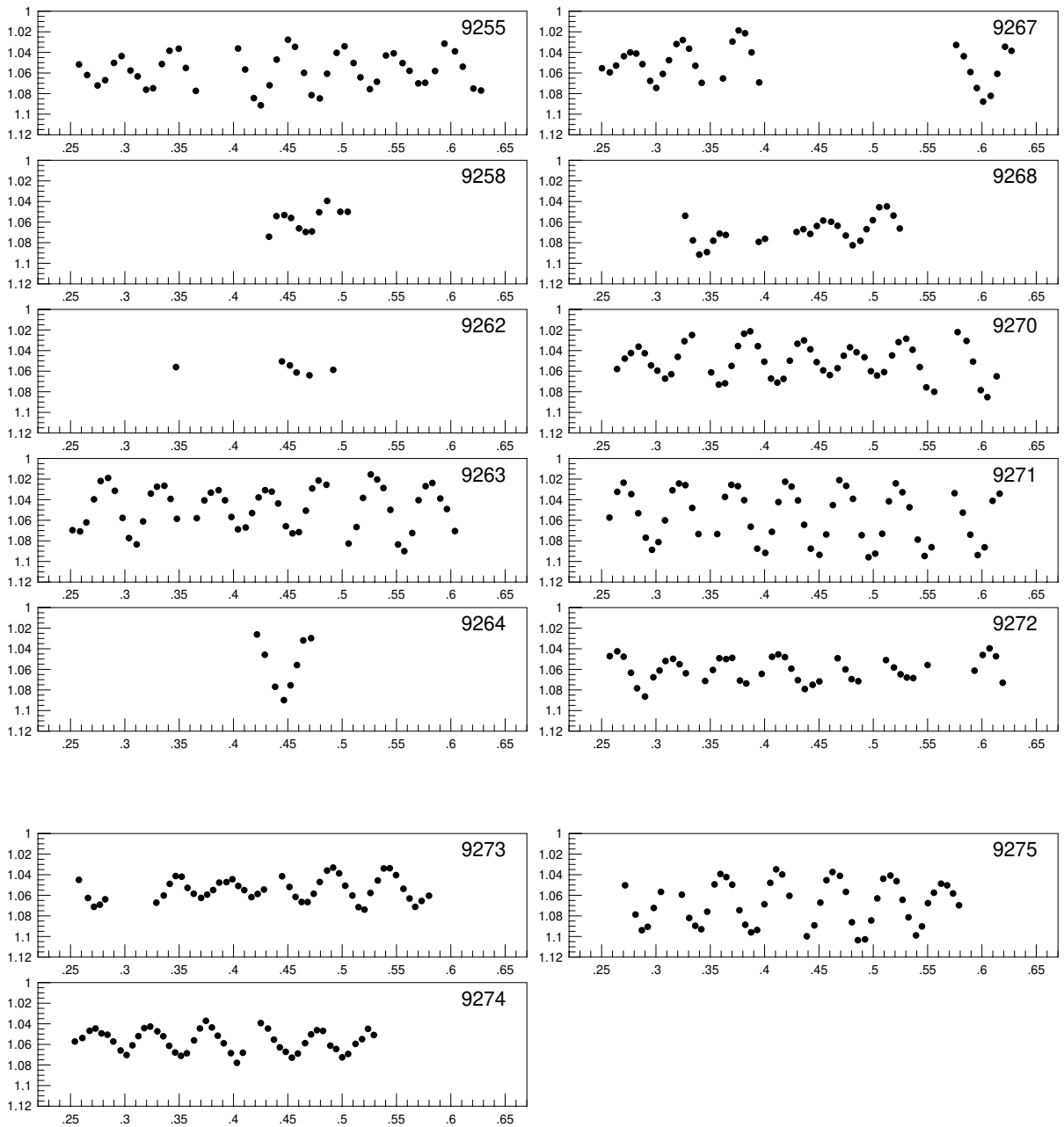


Figure 47: Strömgren b light curve for θ Tuc-(HR83+HR168)/2.

Table 61. Strömgren b data obtained at Sutherland, SAAO by M. Paparó

θ Tuc—	.6110 1.0539	.4041 1.0688	.2819 1.0411	.4881 1.0782
(HR83+HR169)/2	.6208 1.0751	.4112 1.0670	.2876 1.0514	.4938 1.0669
2449255 +	.6278 1.0770	.4171 1.0530	.2947 1.0677	.4996 1.0582
.2578 1.0517	2449258 +	.4231 1.0378	.3003 1.0745	.5055 1.0456
.2653 1.0620	.4327 1.0742	.4291 1.0308	.3063 1.0609	.5125 1.0448
.2749 1.0721	.4395 1.0542	.4352 1.0322	.3120 1.0476	.5186 1.0537
.2819 1.0670	.4468 1.0532	.4411 1.0437	.3189 1.0319	.5244 1.0662
.2900 1.0502	.4530 1.0560	.4482 1.0658	.3247 1.0280	2449270 +
.2970 1.0436	.4603 1.0661	.4543 1.0727	.3305 1.0364	.2642 1.0579
.3052 1.0576	.4664 1.0696	.4602 1.0715	.3363 1.0530	.2713 1.0478
.3118 1.0633	.4722 1.0691	.4666 1.0507	.3421 1.0696	.2770 1.0424
.3196 1.0762	.4788 1.0505	.4724 1.0291	.3617 1.0653	.2840 1.0362
.3260 1.0748	.4862 1.0394	.4783 1.0214	.3704 1.0295	.2897 1.0426
.3341 1.0513	.4983 1.0500	.4855 1.0255	.3761 1.0187	.2955 1.0544
.3411 1.0384	.5051 1.0500	.5059 1.0826	.3820 1.0214	.3013 1.0595
.3496 1.0364	2449262 +	.5132 1.0666	.3880 1.0400	.3084 1.0672
.3561 1.0551	.3471 1.0560	.5192 1.0383	.3950 1.0692	.3141 1.0630
.3653 1.0774	.4446 1.0505	.5263 1.0155	.5763 1.0328	.3201 1.0461
.4042 1.0362	.4519 1.0544	.5322 1.0204	.5833 1.0437	.3262 1.0309
.4107 1.0566	.4580 1.0613	.5380 1.0287	.5894 1.0591	.3332 1.0249
.4187 1.0844	.4699 1.0640	.5444 1.0499	.5953 1.0746	.3508 1.0612
.4251 1.0914	.4918 1.0587	.5514 1.0835	.6011 1.0878	.3578 1.0730
.4332 1.0719	2449263 +	.5572 1.0900	.6081 1.0822	.3636 1.0718
.4397 1.0470	.2518 1.0696	.5645 1.0724	.6141 1.0608	.3696 1.0549
.4501 1.0277	.2588 1.0708	.5703 1.0405	.6212 1.0345	.3755 1.0356
.4566 1.0346	.2646 1.0621	.5768 1.0269	.6272 1.0385	.3811 1.0236
.4649 1.0599	.2716 1.0397	.5830 1.0238	2449268 +	.3868 1.0213
.4718 1.0815	.2777 1.0219	.5903 1.0389	.3269 1.0539	.3938 1.0357
.4794 1.0847	.2846 1.0189	.5964 1.0491	.3340 1.0778	.3997 1.0508
.4861 1.0607	.2908 1.0314	.6038 1.0705	.3399 1.0916	.4059 1.0672
.4949 1.0404	.2979 1.0577	2449264 +	.3469 1.0892	.4117 1.0711
.5022 1.0341	.3038 1.0773	.4216 1.0261	.3527 1.0781	.4174 1.0675
.5105 1.0503	.3109 1.0834	.4288 1.0458	.3586 1.0712	.4232 1.0498
.5168 1.0642	.3168 1.0611	.4383 1.0769	.3643 1.0725	.4302 1.0334
.5255 1.0757	.3239 1.0341	.4464 1.0899	.3946 1.0792	.4363 1.0301
.5320 1.0685	.3296 1.0274	.4525 1.0755	.4004 1.0762	.4421 1.0387
.5403 1.0430	.3364 1.0265	.4584 1.0558	.4294 1.0696	.4479 1.0512
.5474 1.0409	.3421 1.0393	.4642 1.0319	.4357 1.0669	.4539 1.0592
.5556 1.0504	.3479 1.0586	.4714 1.0297	.4420 1.0715	.4600 1.0638
.5620 1.0579	.3662 1.0580	2449267 +	.4481 1.0638	.4671 1.0571
.5701 1.0701	.3732 1.0407	.2503 1.0554	.4539 1.0585	.4728 1.0450
.5764 1.0695	.3792 1.0332	.2575 1.0594	.4612 1.0597	.4786 1.0368
.5855 1.0581	.3863 1.0308	.2633 1.0528	.4671 1.0636	.4846 1.0416
.5941 1.0315	.3922 1.0406	.2705 1.0437	.4747 1.0731	.4919 1.0465
.6038 1.0390	.3981 1.0568	.2763 1.0400	.4810 1.0825	.4978 1.0600

.5035 1.0642	.4628 1.0453	.4306 1.0705	.4682 1.0666	.4031 1.0779
.5100 1.0609	.4688 1.0210	.4370 1.0791	.4738 1.0585	.4086 1.0681
.5173 1.0447	.4751 1.0266	.4442 1.0750	.4794 1.0471	.4251 1.0393
.5233 1.0318	.4813 1.0392	.4504 1.0717	.4861 1.0360	.4317 1.0446
.5303 1.0285	.4893 1.0745	.4672 1.0492	.4917 1.0331	.4372 1.0554
.5362 1.0392	.4956 1.0959	.4744 1.0600	.4972 1.0387	.4426 1.0629
.5428 1.0560	.5018 1.0924	.4800 1.0695	.5028 1.0507	.4481 1.0672
.5488 1.0757	.5082 1.0731	.4862 1.0715	.5094 1.0602	.4537 1.0729
.5561 1.0800	.5144 1.0416	.5117 1.0510	.5150 1.0715	.4592 1.0689
.5776 1.0221	.5207 1.0242	.5190 1.0582	.5205 1.0739	.4659 1.0588
.5858 1.0306	.5268 1.0328	.5251 1.0648	.5260 1.0577	.4714 1.0503
.5918 1.0507	.5333 1.0474	.5309 1.0679	.5328 1.0456	.4768 1.0462
.5989 1.0784	.5409 1.0788	.5368 1.0685	.5383 1.0339	.4824 1.0469
.6050 1.0852	.5472 1.0947	.5500 1.0558	.5438 1.0337	.4891 1.0612
.6135 1.0650	.5536 1.0862	.5932 1.0613	.5496 1.0404	.4945 1.0645
2449271 +	.5748 1.0337	.6007 1.0460	.5564 1.0537	.5000 1.0726
.2572 1.0574	.5824 1.0526	.6070 1.0396	.5620 1.0631	.5055 1.0693
.2644 1.0324	.5893 1.0740	.6129 1.0473	.5672 1.0712	.5123 1.0595
.2702 1.0235	.5961 1.0938	.6191 1.0730	.5731 1.0655	.5183 1.0549
.2773 1.0346	.6025 1.0863	2449273 +	.5799 1.0604	.5238 1.0449
.2837 1.0532	.6098 1.0411	.2577 1.0450	2449274 +	.5292 1.0509
.2906 1.0769	.6163 1.0342	.2661 1.0626	.2540 1.0572	2449275 +
.2964 1.0887	2449272 +	.2716 1.0712	.2609 1.0538	.2716 1.0503
.3023 1.0812	.2575 1.0472	.2770 1.0691	.2676 1.0468	.2812 1.0787
.3083 1.0601	.2644 1.0425	.2819 1.0639	.2730 1.0446	.2870 1.0939
.3152 1.0309	.2703 1.0477	.3290 1.0672	.2785 1.0493	.2924 1.0906
.3212 1.0243	.2770 1.0633	.3358 1.0602	.2840 1.0506	.2980 1.0723
.3271 1.0259	.2826 1.0784	.3413 1.0489	.2894 1.0572	.3046 1.0567
.3334 1.0480	.2899 1.0864	.3468 1.0413	.2961 1.0659	.3238 1.0594
.3391 1.0734	.2976 1.0677	.3523 1.0419	.3016 1.0703	.3306 1.0820
.3564 1.0734	.3033 1.0611	.3577 1.0528	.3070 1.0609	.3362 1.0896
.3635 1.0373	.3088 1.0519	.3634 1.0585	.3125 1.0520	.3417 1.0930
.3694 1.0256	.3158 1.0498	.3702 1.0625	.3179 1.0442	.3472 1.0759
.3754 1.0269	.3217 1.0550	.3758 1.0593	.3234 1.0427	.3539 1.0494
.3812 1.0405	.3275 1.0638	.3813 1.0549	.3299 1.0473	.3593 1.0393
.3872 1.0663	.3453 1.0713	.3869 1.0477	.3354 1.0521	.3648 1.0423
.3932 1.0876	.3524 1.0606	.3935 1.0472	.3408 1.0614	.3702 1.0497
.4006 1.0917	.3583 1.0492	.3990 1.0444	.3463 1.0679	.3768 1.0745
.4067 1.0712	.3646 1.0500	.4044 1.0509	.3517 1.0711	.3822 1.0886
.4127 1.0423	.3702 1.0488	.4099 1.0550	.3571 1.0686	.3876 1.0960
.4189 1.0226	.3773 1.0709	.4165 1.0618	.3637 1.0561	.3931 1.0937
.4248 1.0273	.3831 1.0737	.4222 1.0587	.3691 1.0445	.3998 1.0687
.4307 1.0407	.3973 1.0644	.4280 1.0544	.3746 1.0371	.4052 1.0479
.4364 1.0644	.4068 1.0478	.4447 1.0415	.3801 1.0436	.4106 1.0348
.4425 1.0876	.4126 1.0455	.4515 1.0519	.3855 1.0516	.4162 1.0398
.4505 1.0936	.4187 1.0481	.4571 1.0616	.3910 1.0589	.4228 1.0605
.4567 1.0738	.4246 1.0593	.4627 1.0665	.3976 1.0685	.4388 1.0998

.4458 1.0892	.4748 1.0567	.5037 1.0630	.5324 1.0814	.5624 1.0487
.4513 1.0671	.4803 1.0862	.5092 1.0439	.5393 1.0989	.5680 1.0503
.4569 1.0454	.4858 1.1036	.5158 1.0408	.5448 1.0902	.5734 1.0582
.4625 1.0374	.4924 1.1028	.5214 1.0463	.5503 1.0676	.5789 1.0697
.4693 1.0411	.4981 1.0844	.5269 1.0644	.5558 1.0575	

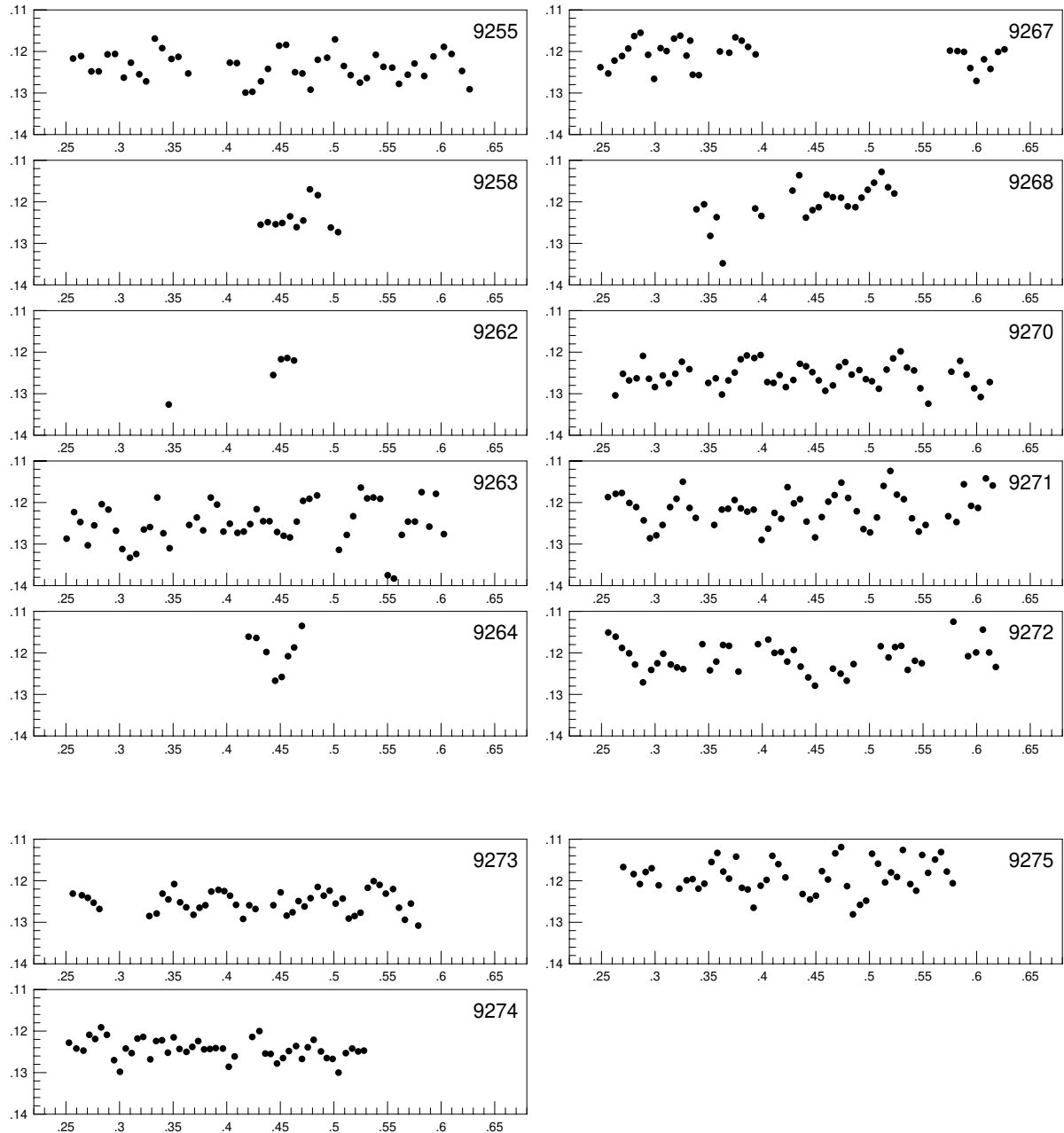


Figure 48: Strömrgren $b-y$ light curves observations obtained at Sutherland, South-Africa by M. Paparó for the difference of θ Tuc—(HR83+HR168)/2.

Table 62. Strömgren b - y data obtained at Sutherland, SAAO by M. Paparó

θ Tuc—	.6098 0.1206	.4100 0.1273	.2864 0.1155	.4984 0.1171
(HR83+HR169)/2	.6195 0.1247	.4159 0.1270	.2935 0.1208	.5043 0.1154
2449255 +	.6266 0.1291	.4219 0.1252	.2991 0.1266	.5113 0.1128
.2566 0.1217	2449258 +	.4279 0.1216	.3051 0.1192	.5174 0.1165
.2641 0.1211	.4316 0.1255	.4340 0.1245	.3108 0.1199	.5232 0.1180
.2737 0.1248	.4383 0.1249	.4399 0.1245	.3177 0.1169	2449270 +
.2806 0.1248	.4456 0.1254	.4470 0.1271	.3235 0.1162	.2629 0.1304
.2888 0.1207	.4518 0.1251	.4531 0.1280	.3293 0.1210	.2700 0.1252
.2958 0.1206	.4591 0.1235	.4590 0.1284	.3351 0.1256	.2758 0.1268
.3040 0.1263	.4652 0.1261	.4653 0.1246	.3409 0.1257	.2828 0.1263
.3106 0.1227	.4714 0.1245	.4712 0.1196	.3605 0.1200	.2887 0.1209
.3184 0.1255	.4776 0.1170	.4771 0.1191	.3692 0.1203	.2943 0.1264
.3248 0.1272	.4850 0.1184	.4843 0.1183	.3749 0.1166	.2998 0.1284
.3329 0.1169	.4971 0.1262	.5047 0.1314	.3808 0.1174	.3072 0.1256
.3398 0.1192	.5039 0.1273	.5120 0.1278	.3868 0.1189	.3129 0.1275
.3484 0.1218	2449262 +	.5180 0.1233	.3938 0.1207	.3189 0.1252
.3549 0.1213	.3459 0.1326	.5251 0.1164	.5751 0.1198	.3250 0.1223
.3641 0.1253	.4434 0.1255	.5310 0.1190	.5821 0.1199	.3320 0.1241
.4029 0.1227	.4507 0.1217	.5368 0.1188	.5882 0.1201	.3496 0.1274
.4095 0.1228	.4565 0.1214	.5432 0.1191	.5941 0.1240	.3566 0.1263
.4175 0.1299	.4628 0.1220	.5502 0.1375	.5998 0.1271	.3624 0.1302
.4239 0.1297	2449263 +	.5560 0.1383	.6069 0.1219	.3684 0.1268
.4319 0.1272	.2506 0.1287	.5633 0.1278	.6129 0.1242	.3743 0.1249
.4385 0.1242	.2576 0.1223	.5691 0.1246	.6200 0.1201	.3799 0.1217
.4489 0.1186	.2634 0.1247	.5756 0.1246	.6260 0.1195	.3856 0.1208
.4554 0.1184	.2704 0.1303	.5818 0.1175	.3328 0.1174	.3926 0.1214
.4637 0.1250	.2764 0.1255	.5890 0.1258	2449268 +	.3985 0.1207
.4706 0.1253	.2834 0.1204	.5952 0.1179	.3386 0.1218	.4047 0.1272
.4782 0.1292	.2896 0.1217	.6026 0.1276	.3457 0.1206	.4105 0.1274
.4849 0.1220	.2967 0.1268	2449264 +	.3515 0.1282	.4162 0.1255
.4937 0.1215	.3026 0.1312	.4204 0.1161	.3574 0.1237	.4220 0.1284
.5010 0.1171	.3097 0.1333	.4276 0.1164	.3631 0.1348	.4290 0.1267
.5093 0.1235	.3156 0.1324	.4370 0.1198	.3934 0.1216	.4351 0.1228
.5156 0.1257	.3227 0.1265	.4452 0.1267	.3992 0.1234	.4409 0.1234
.5243 0.1275	.3284 0.1259	.4513 0.1258	.4282 0.1173	.4467 0.1248
.5307 0.1264	.3352 0.1188	.4572 0.1208	.4345 0.1136	.4527 0.1268
.5391 0.1208	.3409 0.1274	.4629 0.1187	.4407 0.1238	.4588 0.1293
.5462 0.1237	.3467 0.1310	.4701 0.1135	.4469 0.1220	.4659 0.1280
.5544 0.1239	.3650 0.1254	2449267 +	.4527 0.1213	.4716 0.1235
.5607 0.1278	.3721 0.1236	.2490 0.1238	.4600 0.1183	.4774 0.1224
.5689 0.1256	.3780 0.1267	.2563 0.1253	.4659 0.1189	.4834 0.1254
.5752 0.1229	.3851 0.1188	.2621 0.1222	.4735 0.1190	.4906 0.1243
.5843 0.1259	.3910 0.1205	.2692 0.1211	.4798 0.1211	.4966 0.1265
.5929 0.1212	.3969 0.1270	.2750 0.1193	.4869 0.1213	.5023 0.1270
.6026 0.1189	.4029 0.1251	.2806 0.1163	.4926 0.1190	.5088 0.1288

.5160 0.1242	.4738 0.1152	.4492 0.1279	.4726 0.1262	.4074 0.1261
.5221 0.1215	.4801 0.1189	.4659 0.1238	.4782 0.1242	.4238 0.1214
.5291 0.1198	.4881 0.1221	.4731 0.1250	.4849 0.1215	.4305 0.1200
.5350 0.1237	.4944 0.1264	.4788 0.1267	.4905 0.1236	.4360 0.1254
.5416 0.1244	.5006 0.1272	.4852 0.1227	.4960 0.1224	.4410 0.1255
.5475 0.1287	.5070 0.1236	.5105 0.1184	.5016 0.1255	.4469 0.1278
.5549 0.1324	.5132 0.1160	.5178 0.1211	.5082 0.1243	.4525 0.1265
.5764 0.1247	.5195 0.1124	.5239 0.1186	.5138 0.1291	.4580 0.1248
.5846 0.1221	.5256 0.1181	.5297 0.1183	.5193 0.1285	.4647 0.1236
.5906 0.1254	.5321 0.1192	.5357 0.1241	.5248 0.1277	.4702 0.1267
.5977 0.1287	.5397 0.1238	.5424 0.1219	.5316 0.1217	.4756 0.1239
.6038 0.1308	.5460 0.1270	.5488 0.1225	.5371 0.1201	.4811 0.1221
.6123 0.1272	.5524 0.1254	.5783 0.1125	.5426 0.1210	.4879 0.1249
2449271 +	.5735 0.1233	.5920 0.1208	.5484 0.1231	.4933 0.1265
.2560 0.1187	.5812 0.1247	.5995 0.1199	.5552 0.1220	.4988 0.1267
.2632 0.1179	.5881 0.1156	.6058 0.1144	.5607 0.1265	.5043 0.1300
.2690 0.1177	.5949 0.1208	.6117 0.1199	.5662 0.1294	.5111 0.1253
.2760 0.1201	.6013 0.1213	.6179 0.1234	.5718 0.1255	.5170 0.1242
.2824 0.1211	.6086 0.1142	2449273 +	.5787 0.1308	.5226 0.1249
.2894 0.1243	.6150 0.1159	.2564 0.1231	2449274 +	.5280 0.1247
.2952 0.1286	2449272 +	.2649 0.1235	.2528 0.1228	2449275 +
.3011 0.1279	.2563 0.1151	.2704 0.1241	.2597 0.1242	.2703 0.1167
.3070 0.1254	.2632 0.1161	.2758 0.1253	.2663 0.1247	.2800 0.1184
.3140 0.1211	.2691 0.1188	.2812 0.1268	.2718 0.1209	.2858 0.1208
.3200 0.1191	.2758 0.1201	.3278 0.1285	.2773 0.1219	.2912 0.1179
.3259 0.1150	.2813 0.1228	.3346 0.1279	.2828 0.1191	.2968 0.1170
.3322 0.1213	.2887 0.1271	.3401 0.1231	.2882 0.1209	.3034 0.1211
.3379 0.1237	.2964 0.1241	.3456 0.1245	.2949 0.1270	.3226 0.1219
.3552 0.1254	.3021 0.1225	.3510 0.1208	.3004 0.1298	.3294 0.1199
.3623 0.1217	.3076 0.1202	.3565 0.1252	.3058 0.1242	.3350 0.1196
.3681 0.1215	.3146 0.1228	.3622 0.1264	.3113 0.1253	.3405 0.1219
.3742 0.1194	.3205 0.1235	.3690 0.1282	.3167 0.1218	.3460 0.1207
.3800 0.1214	.3263 0.1239	.3746 0.1265	.3221 0.1214	.3526 0.1155
.3860 0.1222	.3441 0.1179	.3801 0.1259	.3287 0.1268	.3581 0.1133
.3920 0.1217	.3512 0.1242	.3856 0.1226	.3341 0.1224	.3636 0.1178
.3994 0.1290	.3571 0.1221	.3923 0.1222	.3396 0.1222	.3690 0.1195
.4055 0.1263	.3634 0.1181	.3977 0.1225	.3451 0.1252	.3756 0.1142
.4114 0.1225	.3690 0.1183	.4031 0.1236	.3505 0.1215	.3810 0.1217
.4177 0.1239	.3778 0.1245	.4087 0.1258	.3559 0.1243	.3864 0.1221
.4236 0.1163	.3960 0.1179	.4153 0.1292	.3624 0.1250	.3919 0.1265
.4295 0.1202	.4056 0.1168	.4210 0.1259	.3679 0.1238	.3985 0.1212
.4352 0.1192	.4114 0.1200	.4268 0.1268	.3734 0.1224	.4040 0.1198
.4413 0.1246	.4175 0.1198	.4435 0.1259	.3789 0.1244	.4094 0.1140
.4493 0.1284	.4233 0.1221	.4503 0.1228	.3843 0.1243	.4150 0.1160
.4555 0.1235	.4294 0.1193	.4559 0.1284	.3897 0.1241	.4216 0.1192
.4616 0.1198	.4358 0.1233	.4614 0.1276	.3964 0.1242	.4376 0.1232
.4675 0.1182	.4429 0.1259	.4670 0.1249	.4019 0.1286	.4446 0.1245

.4501 0.1236	.4791 0.1213	.5080 0.1159	.5381 0.1208	.5668 0.1131
.4557 0.1177	.4846 0.1281	.5146 0.1204	.5436 0.1224	.5722 0.1178
.4613 0.1197	.4912 0.1258	.5201 0.1180	.5492 0.1138	.5777 0.1206
.4681 0.1134	.4969 0.1248	.5257 0.1191	.5547 0.1181	
.4736 0.1119	.5024 0.1135	.5312 0.1126	.5612 0.1149	

A well-established stability analysis requires the observation of two comparison stars. Of course, we followed the usual process and calculated the differential data for the two comparison stars. Both in Australia and in South-Africa the same comparisons, namely HR 83 and HR 169 were observed. Table 63 contains the relative values of the comparisons, while the light curves in Fig 49 for the Australian measurements.

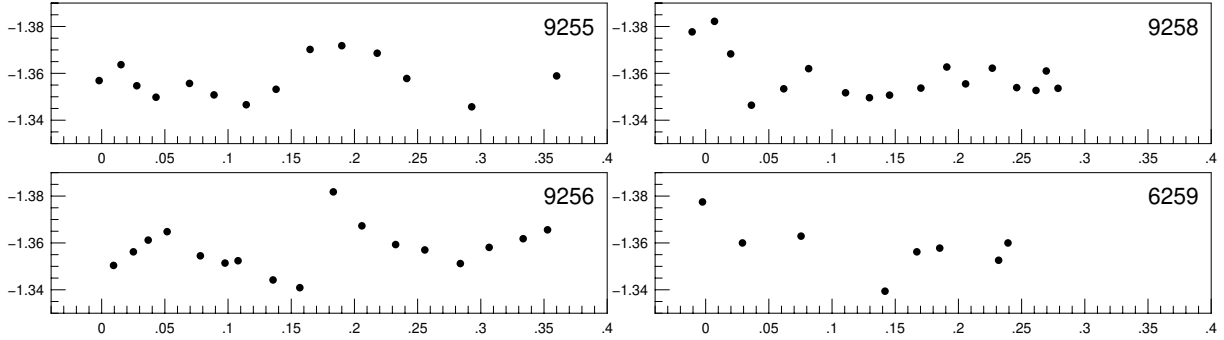
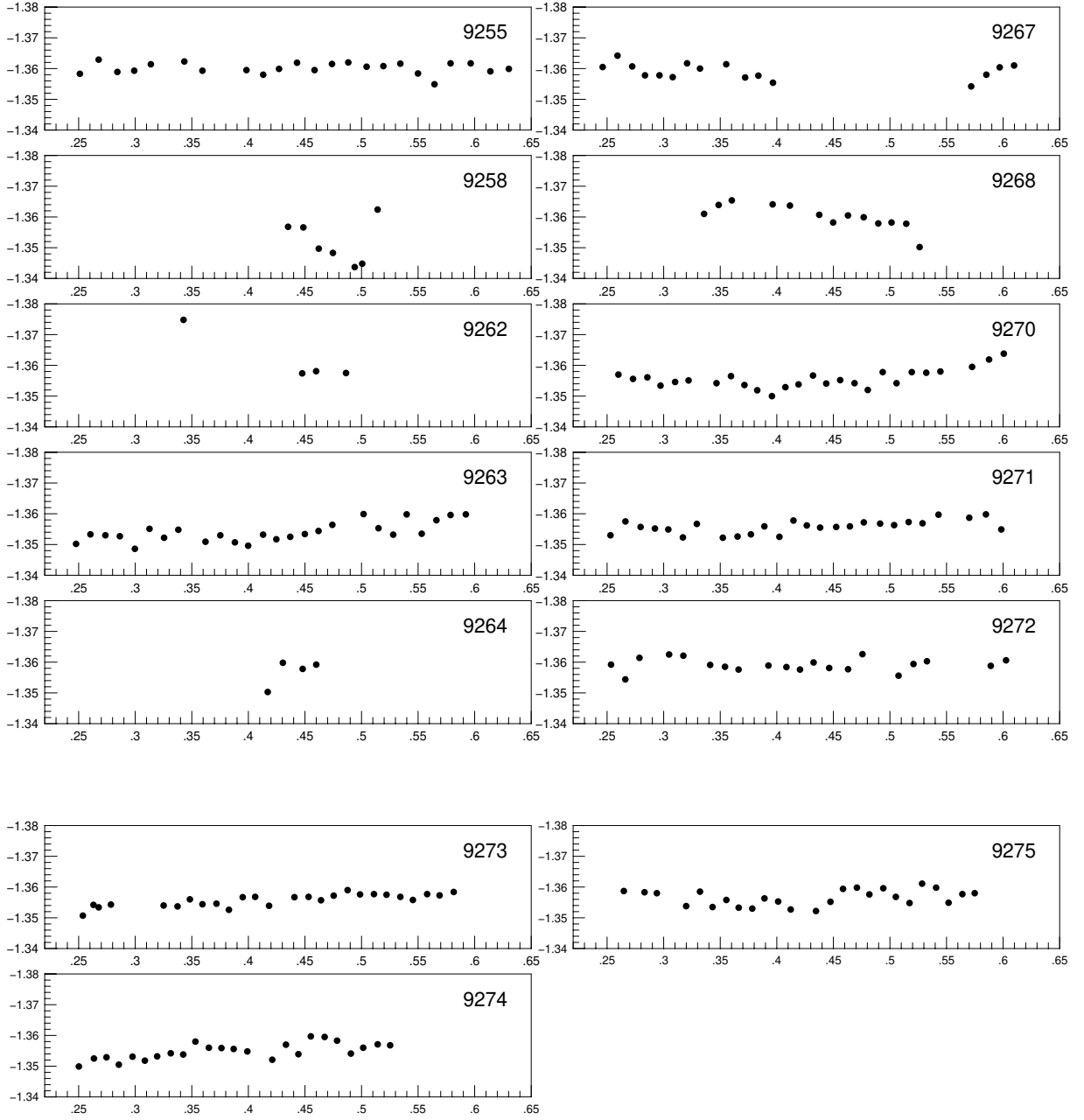


Figure 49: Differential light curve of the two comparison stars (HR 83 – HR 169) obtained in Australia at Perth.

Table 63. Australian data for HR 83 – HR 169.

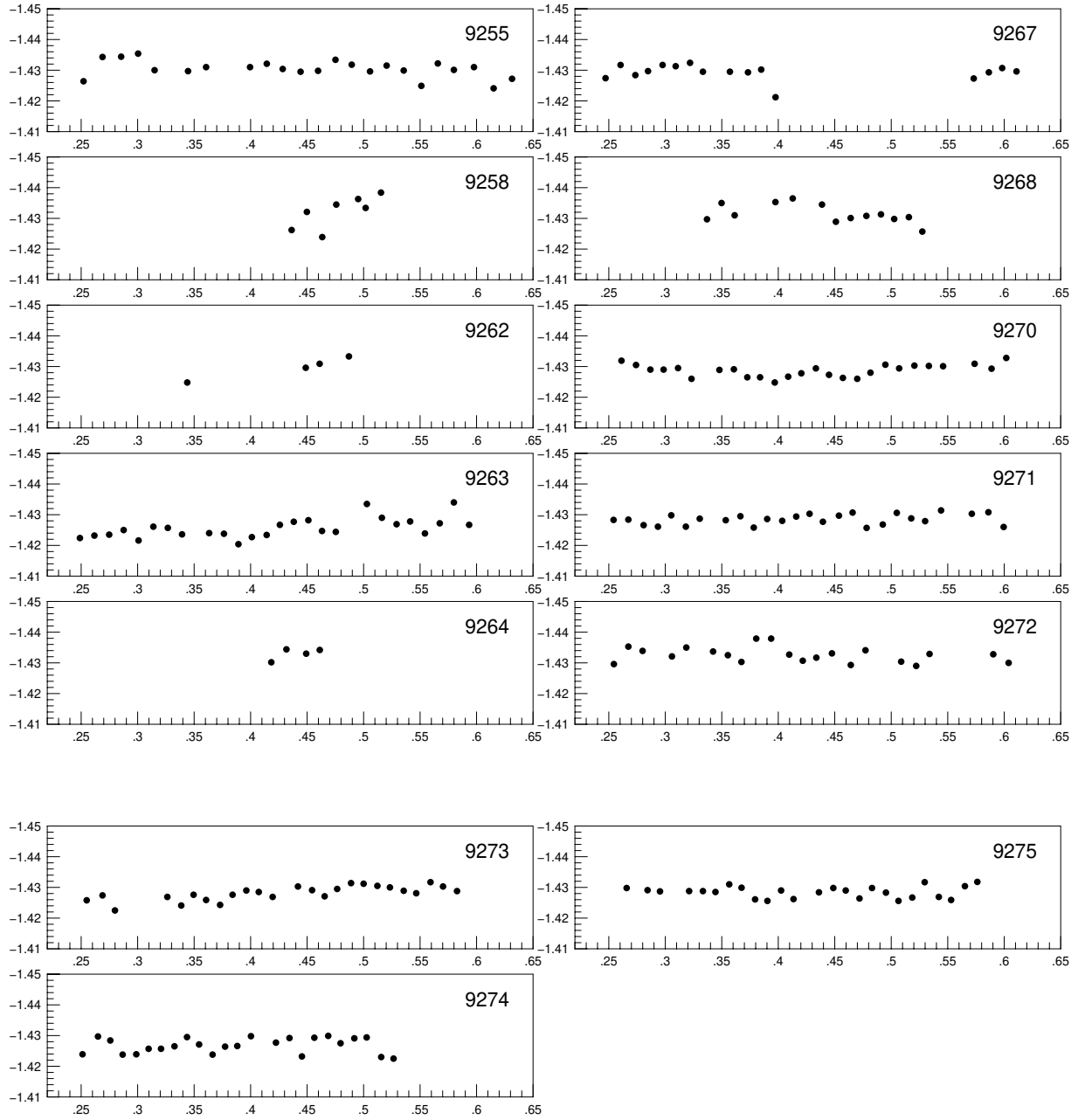
HR 83–HR169	.2180 -1.3686	.1568 -1.3409	.0198 -1.3683	.2695 -1.3610
2449254 +	.2414 -1.3578	.1833 -1.3818	.0362 -1.3464	.2788 -1.3536
.9980 -1.3569	.2928 -1.3457	.2059 -1.3673	.0618 -1.3534	.9754 -1.3944
2449255 +	.3600 -1.3589	.2326 -1.3593	.0815 -1.3620	.9975 -1.3775
.0153 -1.3637	2449256 +	.2557 -1.3570	.1107 -1.3517	2449259 +
.0278 -1.3547	.0094 -1.3504	.2838 -1.3512	.1296 -1.3496	.0291 -1.3600
.0430 -1.3498	.0251 -1.3562	.3066 -1.3581	.1455 -1.3507	.0755 -1.3629
.0695 -1.3557	.0368 -1.3612	.3335 -1.3618	.1703 -1.3537	.1419 -1.3394
.0889 -1.3508	.0518 -1.3648	.3528 -1.3656	.1908 -1.3627	.1671 -1.3562
.1144 -1.3466	.0781 -1.3545	2449257 +	.2057 -1.3555	.1852 -1.3578
.1380 -1.3532	.0976 -1.3514	.9893 -1.3777	.2268 -1.3622	.2318 -1.3526
.1649 -1.3702	.1079 -1.3524	2449258 +	.2461 -1.3539	.2392 -1.3600
.1900 -1.3718	.1356 -1.3442	.0070 -1.3822	.2614 -1.3527	

The data for the South-African Strömgren y and b colours are given in Tables 64 and 65. The light curves are shown in Fig 50 for y colour, while in Fig 51 for Strömgren b colour in South-Africa.

Figure 50: Differential light curves of HR 83 – HR 169 in y colour.**Table 64.** Data of HR 83 – HR 169 in y colour.

HR 83–HR 169	.3434 -1.3623	.4739 -1.3615	.5787 -1.3617	.4622 -1.3497
2449255 +	.3594 -1.3593	.4883 -1.3620	.5965 -1.3617	.4747 -1.3483
.2511 -1.3583	.3983 -1.3595	.5045 -1.3606	.6139 -1.3591	.4940 -1.3437
.2677 -1.3629	.4131 -1.3580	.5193 -1.3608	.6302 -1.3599	.5006 -1.3448
.2842 -1.3589	.4271 -1.3599	.5343 -1.3616	2449258 +	.5142 -1.3624
.2991 -1.3593	.4430 -1.3619	.5499 -1.3584	.4351 -1.3568	2449262 +
.3138 -1.3614	.4585 -1.3595	.5645 -1.3549	.4486 -1.3566	.3427 -1.3748

.4476 -1.3574	.3553 -1.3614	.5321 -1.3576	.4325 -1.3599	.3314 -1.3542
.4599 -1.3581	.3720 -1.3571	.5446 -1.3580	.4463 -1.3581	.3424 -1.3538
.4863 -1.3575	.3837 -1.3577	.5726 -1.3595	.4630 -1.3577	.3532 -1.3580
2449263 +	.3966 -1.3554	.5876 -1.3619	.4757 -1.3626	.3651 -1.3560
.2477 -1.3502	.5718 -1.3542	.6006 -1.3638	.5076 -1.3556	.3762 -1.3559
.2604 -1.3533	.5852 -1.3580	2449271 +	.5208 -1.3594	.3870 -1.3556
.2736 -1.3530	.5970 -1.3604	.2530 -1.3530	.5327 -1.3603	.3991 -1.3548
.2864 -1.3527	.6097 -1.3610	.2662 -1.3575	.5891 -1.3588	.4211 -1.3521
.2997 -1.3486	2449268 +	.2796 -1.3557	.6026 -1.3606	.4332 -1.3570
.3126 -1.3551	.3357 -1.3610	.2923 -1.3552	2449273 +	.4442 -1.3539
.3255 -1.3522	.3486 -1.3639	.3041 -1.3549	.2537 -1.3507	.4552 -1.3597
.3381 -1.3548	.3602 -1.3654	.3170 -1.3523	.2631 -1.3542	.4674 -1.3595
.3621 -1.3509	.3963 -1.3641	.3293 -1.3567	.2677 -1.3534	.4784 -1.3583
.3752 -1.3530	.4116 -1.3637	.3523 -1.3522	.2785 -1.3543	.4906 -1.3541
.3881 -1.3507	.4375 -1.3607	.3653 -1.3526	.3251 -1.3540	.5015 -1.3560
.3998 -1.3496	.4498 -1.3582	.3771 -1.3533	.3374 -1.3537	.5143 -1.3571
.4130 -1.3532	.4629 -1.3605	.3890 -1.3559	.3483 -1.3560	.5253 -1.3568
.4247 -1.3517	.4768 -1.3599	.4023 -1.3525	.3594 -1.3544	2449275 +
.4370 -1.3525	.4897 -1.3579	.4147 -1.3578	.3718 -1.3546	.2648 -1.3587
.4499 -1.3534	.5014 -1.3582	.4265 -1.3562	.3828 -1.3526	.2831 -1.3583
.4620 -1.3544	.5144 -1.3578	.4383 -1.3555	.3950 -1.3567	.2940 -1.3580
.4742 -1.3564	.5262 -1.3502	.4525 -1.3557	.4060 -1.3568	.3199 -1.3538
.5018 -1.3599	2449270 +	.4646 -1.3559	.4183 -1.3539	.3321 -1.3585
.5150 -1.3553	.2600 -1.3570	.4769 -1.3572	.4407 -1.3567	.3432 -1.3535
.5280 -1.3532	.2729 -1.3556	.4913 -1.3568	.4532 -1.3568	.3554 -1.3558
.5399 -1.3598	.2856 -1.3561	.5037 -1.3563	.4642 -1.3557	.3663 -1.3533
.5532 -1.3535	.2972 -1.3534	.5165 -1.3573	.4754 -1.3572	.3783 -1.3530
.5662 -1.3579	.3101 -1.3546	.5288 -1.3569	.4877 -1.3590	.3891 -1.3563
.5787 -1.3596	.3220 -1.3551	.5429 -1.3597	.4987 -1.3576	.4012 -1.3553
.5922 -1.3598	.3467 -1.3542	.5701 -1.3587	.5110 -1.3577	.4123 -1.3527
2449264 +	.3595 -1.3565	.5848 -1.3598	.5221 -1.3575	.4346 -1.3522
.4171 -1.3503	.3714 -1.3536	.5984 -1.3549	.5343 -1.3568	.4474 -1.3552
.4305 -1.3598	.3827 -1.3519	2449272 +	.5454 -1.3558	.4585 -1.3594
.4480 -1.3578	.3957 -1.3500	.2535 -1.3592	.5580 -1.3577	.4708 -1.3598
.4600 -1.3592	.4076 -1.3529	.2661 -1.3544	.5690 -1.3573	.4818 -1.3576
2449267 +	.4192 -1.3538	.2786 -1.3614	.5815 -1.3584	.4941 -1.3596
.2461 -1.3605	.4320 -1.3567	.3048 -1.3625	2449274 +	.5052 -1.3568
.2592 -1.3642	.4437 -1.3541	.3174 -1.3621	.2502 -1.3499	.5173 -1.3548
.2722 -1.3607	.4560 -1.3552	.3411 -1.3591	.2635 -1.3525	.5284 -1.3611
.2835 -1.3578	.4687 -1.3542	.3542 -1.3585	.2746 -1.3529	.5408 -1.3598
.2963 -1.3578	.4804 -1.3520	.3662 -1.3576	.2855 -1.3505	.5518 -1.3549
.3080 -1.3572	.4936 -1.3578	.3926 -1.3589	.2976 -1.3531	.5640 -1.3577
.3207 -1.3617	.5058 -1.3542	.4085 -1.3584	.3085 -1.3518	.5749 -1.3580
.3321 -1.3600	.5193 -1.3578	.4205 -1.3576	.3194 -1.3532	

Figure 51: Differential light curves of HR 83 – HR 169 in b colour.**Table 65.** Data of HR 83 – HR 169 in b colour.

HR 83–HR 169	.3446 -1.4297	.4751 -1.4334	.5799 -1.4301	.4634 -1.4239
2449255 +	.3606 -1.4310	.4895 -1.4318	.5977 -1.4310	.4758 -1.4345
.2521 -1.4264	.3995 -1.4310	.5057 -1.4296	.6151 -1.4241	.4952 -1.4363
.2689 -1.4343	.4143 -1.4321	.5204 -1.4315	.6314 -1.4272	.5018 -1.4334
.2854 -1.4344	.4284 -1.4304	.5355 -1.4299	2449258 +	.5154 -1.4384
.3004 -1.4354	.4442 -1.4295	.5511 -1.4249	.4363 -1.4262	2449262 +
.3150 -1.4300	.4597 -1.4298	.5657 -1.4322	.4498 -1.4321	.3439 -1.4248

.4488 -1.4296	.3572 -1.4295	.5333 -1.4302	.4217 -1.4307	.3326 -1.4265
.4611 -1.4309	.3732 -1.4293	.5459 -1.4301	.4337 -1.4317	.3437 -1.4295
.4870 -1.4333	.3849 -1.4302	.5738 -1.4309	.4475 -1.4331	.3544 -1.4271
2449263 +	.3976 -1.4212	.5888 -1.4293	.4642 -1.4293	.3663 -1.4238
.2489 -1.4224	.5730 -1.4273	.6018 -1.4328	.4772 -1.4341	.3774 -1.4264
.2617 -1.4232	.5864 -1.4293	2449271 +	.5088 -1.4304	.3882 -1.4266
.2748 -1.4235	.5982 -1.4307	.2542 -1.4283	.5221 -1.4290	.4003 -1.4298
.2876 -1.4250	.6109 -1.4296	.2673 -1.4284	.5339 -1.4329	.4224 -1.4277
.3008 -1.4216	2449268 +	.2808 -1.4266	.5903 -1.4328	.4344 -1.4292
.3139 -1.4261	.3369 -1.4297	.2935 -1.4261	.6039 -1.4300	.4454 -1.4232
.3267 -1.4257	.3498 -1.4350	.3053 -1.4298	2449273 +	.4564 -1.4293
.3393 -1.4236	.3614 -1.4310	.3182 -1.4261	.2549 -1.4258	.4687 -1.4299
.3633 -1.4240	.3975 -1.4353	.3305 -1.4287	.2689 -1.4274	.4796 -1.4275
.3764 -1.4238	.4128 -1.4365	.3535 -1.4282	.2799 -1.4225	.4918 -1.4291
.3892 -1.4204	.4387 -1.4345	.3665 -1.4295	.3263 -1.4269	.5027 -1.4294
.4011 -1.4227	.4510 -1.4289	.3783 -1.4258	.3386 -1.4241	.5156 -1.4230
.4142 -1.4234	.4641 -1.4301	.3902 -1.4286	.3495 -1.4276	.5265 -1.4225
.4259 -1.4267	.4780 -1.4308	.4035 -1.4280	.3606 -1.4259	2449275 +
.4382 -1.4277	.4909 -1.4313	.4159 -1.4294	.3730 -1.4243	.2658 -1.4298
.4511 -1.4282	.5026 -1.4298	.4277 -1.4303	.3840 -1.4276	.2843 -1.4291
.4632 -1.4247	.5156 -1.4304	.4395 -1.4277	.3962 -1.4290	.2953 -1.4287
.4754 -1.4244	.5275 -1.4257	.4537 -1.4297	.4072 -1.4285	.3211 -1.4288
.5029 -1.4335	2449270 +	.4658 -1.4307	.4195 -1.4269	.3333 -1.4288
.5162 -1.4290	.2612 -1.4319	.4782 -1.4257	.4419 -1.4303	.3444 -1.4285
.5292 -1.4269	.2741 -1.4305	.4925 -1.4268	.4544 -1.4291	.3566 -1.4310
.5412 -1.4278	.2868 -1.4290	.5049 -1.4306	.4655 -1.4271	.3675 -1.4299
.5543 -1.4239	.2985 -1.4290	.5177 -1.4288	.4766 -1.4295	.3795 -1.4261
.5674 -1.4272	.3113 -1.4295	.5300 -1.4279	.4889 -1.4314	.3904 -1.4256
.5799 -1.4340	.3232 -1.4260	.5441 -1.4314	.5000 -1.4312	.4025 -1.4290
.5934 -1.4267	.3479 -1.4289	.5713 -1.4303	.5122 -1.4305	.4135 -1.4262
2449264 +	.3607 -1.4291	.5860 -1.4308	.5233 -1.4300	.4360 -1.4284
.4183 -1.4302	.3726 -1.4265	.5995 -1.4260	.5355 -1.4289	.4487 -1.4298
.4317 -1.4344	.3839 -1.4265	2449272 +	.5466 -1.4281	.4597 -1.4290
.4492 -1.4330	.3969 -1.4248	.2545 -1.4296	.5592 -1.4317	.4719 -1.4264
.4612 -1.4342	.4088 -1.4267	.2673 -1.4353	.5703 -1.4303	.4830 -1.4298
2449267 +	.4204 -1.4278	.2799 -1.4339	.5827 -1.4288	.4953 -1.4283
.2471 -1.4274	.4333 -1.4294	.3059 -1.4321	2449274 +	.5064 -1.4256
.2604 -1.4317	.4449 -1.4273	.3186 -1.4350	.2512 -1.4239	.5186 -1.4267
.2735 -1.4284	.4572 -1.4263	.3423 -1.4337	.2649 -1.4297	.5296 -1.4317
.2847 -1.4297	.4699 -1.4260	.3554 -1.4325	.2758 -1.4284	.5421 -1.4269
.2976 -1.4317	.4816 -1.4280	.3674 -1.4303	.2867 -1.4238	.5530 -1.4259
.3092 -1.4313	.4948 -1.4306	.3805 -1.4379	.2988 -1.4239	.5652 -1.4304
.3219 -1.4324	.5070 -1.4294	.3937 -1.4379	.3097 -1.4257	.5762 -1.4318
.3333 -1.4295	.5205 -1.4303	.4097 -1.4327	.3207 -1.4257	

These data were the base to show the extremely regular arrangement of the excited modes in a low-amplitude δ Scuti star. The Fig 7 of the Paper I on θ Tuc shows the

schematic frequency spectrum showing the excited modes of the highest amplitude. Figs 5 and 6 show how precisely the light curves are fitted by these frequencies. According to the colour amplitude ratio and the phase difference between b - y and b , a mode identification was attempted (Paper III). Although the pulsational theory do not suggests a regular arrangement of the high amplitude modes in δ Scuti star, maybe more precise, continuous space observations would help to provide the knowledge.

The archived files for θ Tuc and the comparisons are: Thetetuc—meanHR83HR169.arch (Table 60, 59, 61 and 62) and HR83—HR169.arch (Table 64, 63 and 65).

CoRoT 10274568, alias Konkoly 21

M. Paparó joined the preparatory work of the CoRoT mission for variable stars when the ESA Eddington mission was cancelled. Since there was an approved proposal for the Eddington mission, ESA allowed us to join CoRoT, the French space mission as an ESA-Hungarian contribution. We, the basic contributors of the Hungarian CoRoT group (Zsófia Bognár, József Benkő, Zoltán Csubry and Róbert Szabó) searched potential variable targets on the possible CoRoT fields and we determined light curves for the known variable stars of different types on the fields. Later younger colleagues (László Molnár, Emese Plachy, Péter Pápics, Krisztián Sárneczky also joined the work for shorter intervals). We had international contributors, too. The activity of the CoRoT team is summarized on the home page of Konkoly Observatory. The link to the CoRoT Hungarian Asteroseismology group is given at <https://webarch.konkoly.hu/hag/research/ccd.html>.

Luckily, we discovered an additional possible target for CoRoT space observations. The variability of a star in the field of HD 292192 was discovered by József Benkő on Feb. 4/5 2005 (JD 2453406). As it was reduced as 21th star on the field, we named as Konkoly 21. Although the star was on the exo-field, we proposed the star for more frequently sampling, which is necessary for getting proper frequency solution in the analyses.

Finally, our proposal was accepted and Konkoly 21 was observed as CoRoT 10274568 during the first long run in the anti-center direction (LRa01) from October 24, 2007 to March 3, 2008, which means over 131 days. According to the CoRoT/Exoplanet input catalogue its brightness and color index were $B = 15.006$ and $B - V = 0.598$ and the spectral type and luminosity class are A5 IV. Because the observed data by CoRoT is not our personal achievement, we do not involve it in the Hungarian Communications.

Of course, we continued the ground-based observation in 2011 and 2012 observational seasons to extend the timebase and to get additional colour data compared to the input catalogue. Zsófia Bognár obtained the CCD frames and did the reductions. The details of the CCD observations are written in the published paper (Paparó et al. 2013). Two stars were selected on the CCD frame as comparison stars: USNO-B1.0 0899-0101486 and USNO-B1.0 0899-0101543 and their average light curve was used for the differential photometry. For easier citation in the tables their mean is called as $C = (\text{USNO-B1.0 0899-0101486} + \text{USNO-B1.0 0899-0101543})/2$. The log of the observations is given in Table 66. The data for B, V, R , and I colours are given in Table 67, 68, 69 and 70. The light curves are shown in Figures 52, 53, 54 and 55. In the figures the light curve obtained on JD 2455896 is not included because of the short run.

Table 66. Journal of the observations on Konkoly 21

Date	HJD 2400000+	Length hours	No. of obs.	Filter
Feb 05 2011	55598	2.14	22	BVRI
Feb 07 2011	55600	5.19	54	BVRI
Feb 09 2011	55602	5.55	44	BVRI
Nov 24 2011	55890	3.54	49	BVRI
Nov 28 2011	55894	4.69	67	BVRI
Nov 29 2011	55895	4.69	54	BVRI
Nov 30 2011	55896	3.64	10	BVRI
Jan 29 2012	55956	5.17	47	BVRI
Feb 20 2012	55978	3.34	36	BVRI
Feb 21 2012	55979	4.23	44	BVRI
Feb 22 2012	55980	4.34	56	BVRI
All		42.42	483	

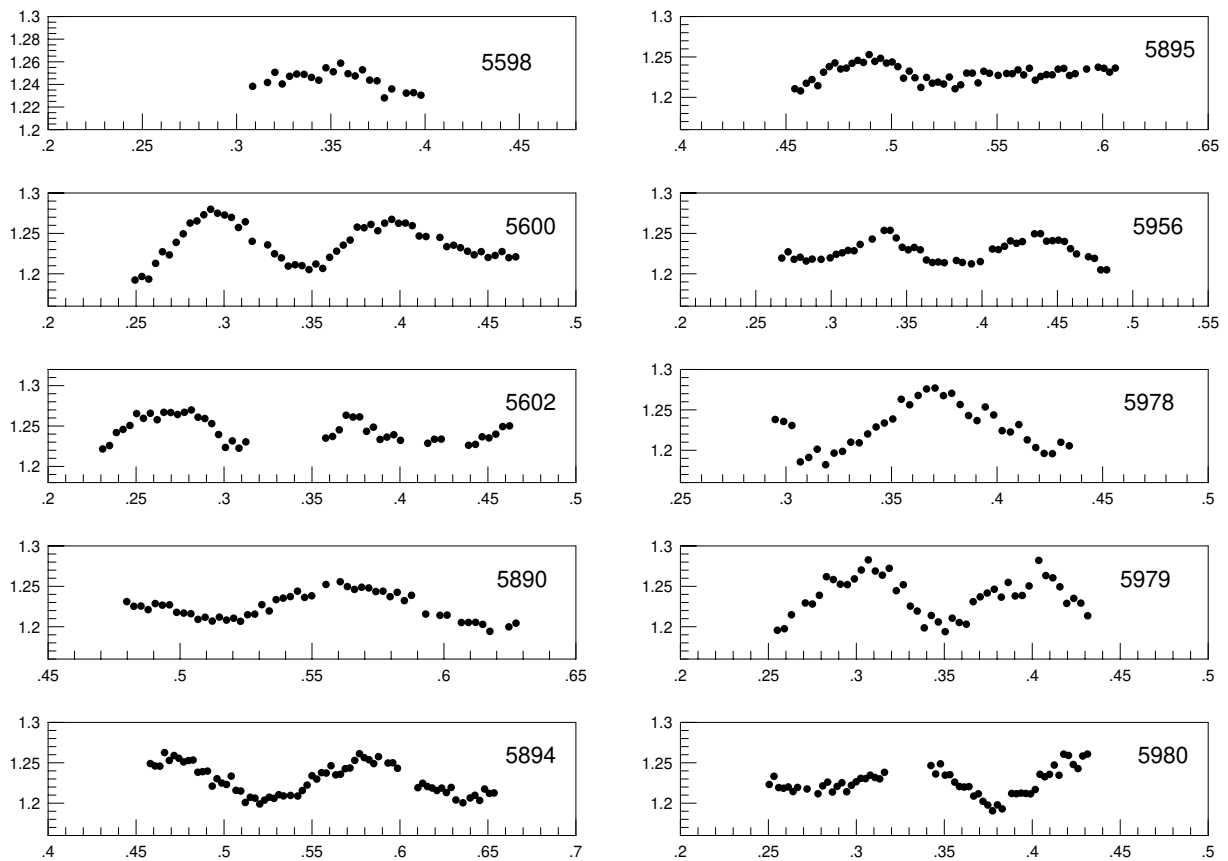
B light curves of CoRoT 10274568Figure 52: Light curves of Johnson *B* observations on CoRoT 10274568

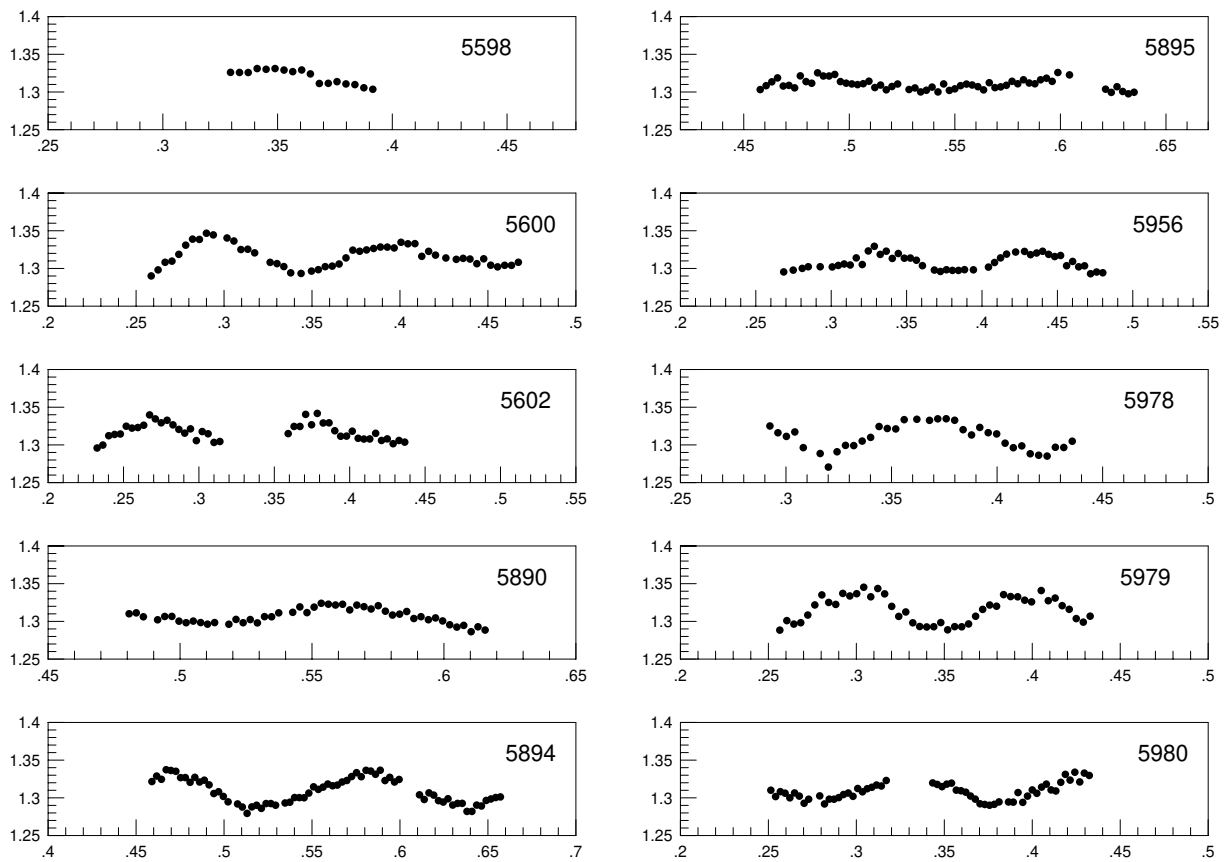
Table 67. Johnson *B* observations of CoRoT 10274568

CoRoT	0.3287 1.2248	0.2658 1.2670	0.5041 1.2161	0.4689 1.2529
10274568 - C	0.3326 1.2197	0.2697 1.2667	0.5068 1.2091	0.4716 1.2590
2455598 +	0.3365 1.2095	0.2736 1.2643	0.5095 1.2117	0.4743 1.2556
0.3085 1.2383	0.3404 1.2112	0.2775 1.2670	0.5122 1.2070	0.4770 1.2511
0.3164 1.2417	0.3443 1.2101	0.2814 1.2699	0.5149 1.2119	0.4798 1.2528
0.3203 1.2507	0.3483 1.2052	0.2852 1.2609	0.5176 1.2082	0.4824 1.2534
0.3242 1.2404	0.3522 1.2121	0.2891 1.2593	0.5203 1.2105	0.4851 1.2383
0.3281 1.2472	0.3561 1.2067	0.2930 1.2530	0.5229 1.2067	0.4878 1.2390
0.3319 1.2492	0.3600 1.2204	0.2969 1.2395	0.5256 1.2148	0.4906 1.2397
0.3358 1.2489	0.3640 1.2280	0.3008 1.2235	0.5283 1.2156	0.4933 1.2211
0.3397 1.2462	0.3678 1.2355	0.3047 1.2316	0.5310 1.2273	0.4960 1.2303
0.3436 1.2437	0.3717 1.2418	0.3085 1.2226	0.5338 1.2195	0.4987 1.2250
0.3474 1.2547	0.3757 1.2578	0.3124 1.2304	0.5364 1.2335	0.5014 1.2232
0.3513 1.2512	0.3796 1.2570	0.3578 1.2351	0.5391 1.2354	0.5041 1.2335
0.3552 1.2588	0.3835 1.2611	0.3617 1.2371	0.5418 1.2373	0.5068 1.2159
0.3591 1.2495	0.3874 1.2533	0.3655 1.2453	0.5445 1.2440	0.5095 1.2151
0.3629 1.2475	0.3913 1.2627	0.3694 1.2634	0.5472 1.2363	0.5121 1.2009
0.3668 1.2529	0.3953 1.2674	0.3733 1.2611	0.5499 1.2383	0.5149 1.2073
0.3706 1.2438	0.3992 1.2626	0.3771 1.2613	0.5553 1.2523	0.5176 1.2062
0.3745 1.2432	0.4031 1.2628	0.3810 1.2434	0.5607 1.2557	0.5203 1.1990
0.3784 1.2281	0.4070 1.2596	0.3849 1.2486	0.5634 1.2497	0.5230 1.2038
0.3823 1.2360	0.4109 1.2468	0.3887 1.2334	0.5661 1.2462	0.5257 1.2074
0.3900 1.2323	0.4148 1.2461	0.3926 1.2363	0.5688 1.2489	0.5284 1.2060
0.3939 1.2327	0.4227 1.2450	0.3965 1.2392	0.5715 1.2480	0.5311 1.2105
0.3978 1.2305	0.4266 1.2336	0.4003 1.2323	0.5742 1.2435	0.5338 1.2090
2455600 +	0.4305 1.2354	0.4158 1.2287	0.5769 1.2440	0.5378 1.2096
0.2494 1.1923	0.4344 1.2323	0.4196 1.2337	0.5796 1.2372	0.5419 1.2089
0.2533 1.1967	0.4384 1.2279	0.4235 1.2338	0.5823 1.2426	0.5445 1.2157
0.2572 1.1934	0.4422 1.2235	0.4390 1.2262	0.5850 1.2323	0.5472 1.2224
0.2611 1.2129	0.4462 1.2274	0.4429 1.2273	0.5877 1.2389	0.5500 1.2340
0.2650 1.2273	0.4501 1.2202	0.4467 1.2367	0.5931 1.2157	0.5527 1.2298
0.2689 1.2234	0.4541 1.2227	0.4506 1.2353	0.5985 1.2141	0.5554 1.2378
0.2728 1.2389	0.4580 1.2275	0.4545 1.2399	0.6012 1.2144	0.5581 1.2373
0.2768 1.2495	0.4619 1.2200	0.4584 1.2493	0.6066 1.2052	0.5608 1.2464
0.2807 1.2628	0.4658 1.2210	0.4623 1.2502	0.6093 1.2053	0.5635 1.2351
0.2846 1.2654	2455602 +	2455890 +	0.6120 1.2054	0.5662 1.2359
0.2885 1.2731	0.2310 1.2216	0.4798 1.2311	0.6147 1.2029	0.5689 1.2427
0.2924 1.2799	0.2349 1.2258	0.4825 1.2253	0.6174 1.1943	0.5716 1.2436
0.2963 1.2750	0.2388 1.2419	0.4852 1.2256	0.6246 1.1998	0.5743 1.2530
0.3003 1.2728	0.2426 1.2458	0.4879 1.2211	0.6273 1.2044	0.5770 1.2613
0.3042 1.2698	0.2465 1.2507	0.4906 1.2287	2455894 +	0.5797 1.2563
0.3082 1.2573	0.2503 1.2654	0.4933 1.2267	0.4581 1.2490	0.5824 1.2538
0.3121 1.2644	0.2542 1.2595	0.4960 1.2271	0.4608 1.2461	0.5851 1.2490
0.3160 1.2402	0.2581 1.2658	0.4987 1.2178	0.4635 1.2458	0.5878 1.2576
0.3248 1.2358	0.2620 1.2578	0.5014 1.2169	0.4662 1.2626	0.5932 1.2497

0.5959 1.2500	0.5301 1.2106	0.3073 1.2260	0.3268 1.1986	0.3307 1.2255
0.5986 1.2432	0.5328 1.2155	0.3112 1.2290	0.3307 1.2100	0.3346 1.2194
0.6102 1.2192	0.5356 1.2300	0.3152 1.2285	0.3347 1.2092	0.3386 1.1986
0.6129 1.2247	0.5383 1.2300	0.3192 1.2364	0.3387 1.2202	0.3426 1.2139
0.6156 1.2206	0.5410 1.2179	0.3272 1.2430	0.3427 1.2288	0.3466 1.2059
0.6183 1.2188	0.5437 1.2323	0.3351 1.2537	0.3466 1.2337	0.3505 1.1939
0.6210 1.2157	0.5464 1.2298	0.3391 1.2538	0.3506 1.2387	0.3545 1.2106
0.6237 1.2187	0.5505 1.2272	0.3431 1.2444	0.3546 1.2631	0.3585 1.2052
0.6264 1.2131	0.5545 1.2295	0.3471 1.2328	0.3586 1.2563	0.3625 1.2031
0.6291 1.2195	0.5572 1.2293	0.3511 1.2297	0.3626 1.2678	0.3664 1.2310
0.6318 1.2040	0.5599 1.2340	0.3551 1.2327	0.3666 1.2759	0.3704 1.2370
0.6358 1.2005	0.5626 1.2278	0.3591 1.2297	0.3706 1.2770	0.3744 1.2417
0.6399 1.2065	0.5653 1.2360	0.3631 1.2171	0.3746 1.2676	0.3784 1.2464
0.6426 1.2098	0.5681 1.2213	0.3671 1.2140	0.3785 1.2705	0.3824 1.2366
0.6453 1.2034	0.5707 1.2259	0.3710 1.2146	0.3825 1.2566	0.3863 1.2548
0.6481 1.2175	0.5734 1.2281	0.3750 1.2137	0.3865 1.2430	0.3903 1.2381
0.6508 1.2121	0.5761 1.2279	0.3830 1.2165	0.3905 1.2367	0.3943 1.2387
0.6535 1.2127	0.5789 1.2349	0.3870 1.2140	0.3944 1.2536	0.3982 1.2505
2455895 +	0.5816 1.2358	0.3930 1.2123	0.3984 1.2437	0.4037 1.2821
0.4542 1.2106	0.5843 1.2271	0.3989 1.2151	0.4024 1.2242	0.4077 1.2633
0.4569 1.2080	0.5870 1.2293	0.4069 1.2307	0.4063 1.2226	0.4117 1.2605
0.4596 1.2174	0.5924 1.2350	0.4109 1.2300	0.4103 1.2318	0.4157 1.2494
0.4623 1.2220	0.5979 1.2373	0.4149 1.2341	0.4143 1.2129	0.4196 1.2289
0.4651 1.2144	0.6006 1.2360	0.4189 1.2407	0.4183 1.2034	0.4236 1.2351
0.4678 1.2311	0.6033 1.2312	0.4229 1.2378	0.4223 1.1961	0.4276 1.2292
0.4705 1.2380	0.6060 1.2362	0.4268 1.2399	0.4262 1.1958	0.4315 1.2136
0.4732 1.2426	2455896 +	0.4348 1.2495	0.4302 1.2099	2455980 +
0.4759 1.2351	0.4527 1.2309	0.4388 1.2497	0.4342 1.2055	0.2505 1.2232
0.4786 1.2362	0.4553 1.2303	0.4428 1.2404	2455979 +	0.2532 1.2333
0.4813 1.2421	0.4580 1.2200	0.4468 1.2410	0.2551 1.1956	0.2559 1.2193
0.4840 1.2457	0.4608 1.2205	0.4507 1.2416	0.2591 1.1975	0.2586 1.2185
0.4867 1.2432	0.4635 1.2149	0.4547 1.2400	0.2631 1.2148	0.2613 1.2201
0.4894 1.2529	0.4662 1.2104	0.4587 1.2311	0.2710 1.2294	0.2640 1.2144
0.4921 1.2445	0.4689 1.2131	0.4627 1.2246	0.2750 1.2281	0.2666 1.2195
0.4948 1.2483	0.4716 1.2060	0.4706 1.2211	0.2790 1.2389	0.2720 1.2176
0.4976 1.2424	0.4743 1.2085	0.4746 1.2191	0.2830 1.2619	0.2782 1.2117
0.5003 1.2438	0.4771 1.2085	0.4787 1.2049	0.2869 1.2584	0.2809 1.2214
0.5030 1.2380	2455956 +	0.4827 1.2049	0.2909 1.2527	0.2837 1.2261
0.5057 1.2237	0.2672 1.2195	2455978 +	0.2949 1.2521	0.2864 1.2138
0.5084 1.2324	0.2714 1.2272	0.2949 1.2381	0.2989 1.2592	0.2891 1.2208
0.5111 1.2242	0.2754 1.2179	0.2989 1.2356	0.3028 1.2702	0.2918 1.2253
0.5139 1.2123	0.2794 1.2205	0.3028 1.2307	0.3068 1.2827	0.2945 1.2141
0.5166 1.2246	0.2834 1.2158	0.3068 1.1856	0.3108 1.2689	0.2972 1.2221
0.5193 1.2175	0.2874 1.2182	0.3108 1.1911	0.3148 1.2638	0.2999 1.2265
0.5220 1.2188	0.2933 1.2179	0.3148 1.2013	0.3187 1.2723	0.3025 1.2308
0.5247 1.2165	0.2993 1.2197	0.3188 1.1821	0.3227 1.2446	0.3052 1.2303
0.5274 1.2251	0.3033 1.2241	0.3228 1.1965	0.3267 1.2520	0.3079 1.2347

0.3106 1.2318	0.3559 1.2261	0.3774 1.1906	0.4017 1.2169	0.4233 1.2479
0.3133 1.2301	0.3586 1.2206	0.3802 1.1979	0.4044 1.2357	0.4260 1.2428
0.3160 1.2382	0.3613 1.2200	0.3829 1.1930	0.4071 1.2327	0.4287 1.2584
0.3424 1.2466	0.3640 1.2205	0.3883 1.2120	0.4098 1.2357	0.4314 1.2608
0.3451 1.2362	0.3667 1.2088	0.3910 1.2117	0.4125 1.2472	
0.3478 1.2487	0.3694 1.2116	0.3937 1.2125	0.4152 1.2346	
0.3505 1.2347	0.3720 1.2023	0.3963 1.2120	0.4179 1.2607	
0.3532 1.2353	0.3747 1.1977	0.3990 1.2115	0.4206 1.2591	

V light curves of CoRoT 10274568

Figure 53: Light curves of Johnson *V* observations on CoRoT 10274568**Table 68.** Johnson *V* observations of CoRoT 10274568

CoRoT	0.3450 1.3301	0.3721 1.3115	0.2508 1.2779	0.2782 1.3309
10274568 - C	0.3489 1.3311	0.3759 1.3137	0.2547 1.2862	0.2821 1.3389
2455598 +	0.3528 1.3291	0.3798 1.3107	0.2586 1.2901	0.2860 1.3385
0.3295 1.3260	0.3566 1.3270	0.3837 1.3098	0.2625 1.2981	0.2900 1.3467
0.3334 1.3259	0.3605 1.3292	0.3876 1.3056	0.2665 1.3082	0.2939 1.3445
0.3372 1.3258	0.3643 1.3240	0.3915 1.3036	0.2704 1.3097	0.3017 1.3404
0.3411 1.3311	0.3682 1.3113	2455600 +	0.2743 1.3187	0.3056 1.3364

0.3096 1.3251	0.2634 1.3261	0.4996 1.3003	0.4698 1.3363	0.6111 1.3040
0.3135 1.3255	0.2673 1.3398	0.5023 1.2982	0.4726 1.3352	0.6138 1.2978
0.3174 1.3207	0.2711 1.3345	0.5050 1.3004	0.4753 1.3268	0.6165 1.3066
0.3262 1.3081	0.2750 1.3293	0.5078 1.2984	0.4780 1.3269	0.6192 1.3036
0.3301 1.3064	0.2789 1.3327	0.5104 1.2963	0.4807 1.3206	0.6219 1.2963
0.3340 1.3025	0.2828 1.3266	0.5131 1.2984	0.4834 1.3272	0.6246 1.2944
0.3379 1.2942	0.2867 1.3206	0.5185 1.2962	0.4861 1.3210	0.6273 1.2988
0.3438 1.2934	0.2906 1.3156	0.5212 1.3026	0.4888 1.3234	0.6300 1.2904
0.3497 1.2965	0.2944 1.3213	0.5239 1.2982	0.4915 1.3172	0.6327 1.2926
0.3536 1.2984	0.2983 1.3057	0.5266 1.3024	0.4942 1.3057	0.6354 1.2927
0.3575 1.3024	0.3022 1.3177	0.5293 1.2980	0.4969 1.3081	0.6381 1.2820
0.3615 1.3031	0.3061 1.3148	0.5320 1.3063	0.4996 1.3019	0.6409 1.2820
0.3654 1.3059	0.3100 1.3033	0.5347 1.3061	0.5023 1.2947	0.6436 1.2904
0.3693 1.3140	0.3139 1.3045	0.5374 1.3113	0.5077 1.2919	0.6463 1.2892
0.3732 1.3243	0.3592 1.3150	0.5427 1.3120	0.5104 1.2878	0.6490 1.2965
0.3771 1.3228	0.3631 1.3245	0.5454 1.3192	0.5131 1.2794	0.6517 1.2985
0.3810 1.3246	0.3670 1.3245	0.5481 1.3116	0.5158 1.2880	0.6544 1.3004
0.3850 1.3265	0.3708 1.3405	0.5508 1.3189	0.5185 1.2902	0.6571 1.3012
0.3889 1.3284	0.3747 1.3267	0.5535 1.3240	0.5212 1.2860	2455895 +
0.3928 1.3283	0.3785 1.3418	0.5562 1.3228	0.5239 1.2924	0.4578 1.3032
0.3967 1.3272	0.3824 1.3291	0.5589 1.3217	0.5266 1.2924	0.4606 1.3084
0.4006 1.3347	0.3863 1.3293	0.5616 1.3227	0.5293 1.2902	0.4633 1.3135
0.4045 1.3327	0.3901 1.3188	0.5643 1.3152	0.5347 1.2932	0.4660 1.3187
0.4085 1.3329	0.3940 1.3115	0.5670 1.3216	0.5374 1.2942	0.4687 1.3079
0.4124 1.3161	0.3979 1.3117	0.5697 1.3195	0.5401 1.3004	0.4714 1.3088
0.4163 1.3227	0.4017 1.3182	0.5724 1.3164	0.5428 1.3003	0.4741 1.3055
0.4202 1.3177	0.4056 1.3088	0.5751 1.3208	0.5455 1.3001	0.4768 1.3214
0.4261 1.3139	0.4094 1.3078	0.5778 1.3135	0.5482 1.3063	0.4795 1.3138
0.4320 1.3121	0.4133 1.3079	0.5805 1.3084	0.5509 1.3146	0.4822 1.3116
0.4359 1.3134	0.4172 1.3154	0.5832 1.3096	0.5536 1.3112	0.4850 1.3254
0.4398 1.3125	0.4211 1.3059	0.5859 1.3131	0.5563 1.3142	0.4877 1.3212
0.4437 1.3063	0.4249 1.3080	0.5886 1.3038	0.5590 1.3183	0.4904 1.3212
0.4476 1.3128	0.4288 1.3016	0.5913 1.3062	0.5617 1.3160	0.4931 1.3233
0.4516 1.3043	0.4327 1.3059	0.5941 1.3022	0.5644 1.3169	0.4958 1.3138
0.4555 1.3021	0.4365 1.3037	0.5968 1.3046	0.5671 1.3210	0.4985 1.3117
0.4595 1.3042	0.4443 1.3164	0.5995 1.3006	0.5698 1.3230	0.5012 1.3107
0.4634 1.3041	0.4482 1.3099	0.6022 1.2955	0.5725 1.3282	0.5039 1.3098
0.4673 1.3082	0.4521 1.3173	0.6049 1.2924	0.5753 1.3334	0.5066 1.3110
2455602 +	0.4598 1.3170	0.6075 1.2947	0.5780 1.3280	0.5093 1.3143
0.2325 1.2959	0.4637 1.3137	0.6103 1.2863	0.5807 1.3365	0.5121 1.3059
0.2363 1.2998	2455890 +	0.6129 1.2928	0.5834 1.3355	0.5148 1.3092
0.2402 1.3122	0.4807 1.3101	0.6156 1.2885	0.5861 1.3312	0.5175 1.3029
0.2441 1.3139	0.4834 1.3113	2455894 +	0.5888 1.3366	0.5202 1.3073
0.2479 1.3145	0.4861 1.3061	0.4590 1.3216	0.5915 1.3229	0.5229 1.3106
0.2518 1.3248	0.4915 1.3021	0.4617 1.3289	0.5942 1.3272	0.5283 1.3033
0.2556 1.3223	0.4942 1.3065	0.4644 1.3246	0.5969 1.3210	0.5311 1.3054
0.2595 1.3231	0.4969 1.3066	0.4671 1.3373	0.5995 1.3244	0.5338 1.3001

0.5365 1.3023	0.2748 1.2978	0.2924 1.3251	0.3002 1.3367	0.2873 1.2982
0.5392 1.3065	0.2808 1.3001	0.2962 1.3161	0.3042 1.3453	0.2900 1.3003
0.5420 1.3001	0.2848 1.3023	0.3002 1.3113	0.3082 1.3326	0.2927 1.3044
0.5447 1.3107	0.2927 1.3023	0.3042 1.3172	0.3122 1.3436	0.2954 1.3064
0.5474 1.3021	0.3007 1.3020	0.3082 1.2964	0.3161 1.3365	0.2981 1.3020
0.5500 1.3042	0.3047 1.3040	0.3162 1.2886	0.3201 1.3199	0.3008 1.3124
0.5527 1.3084	0.3086 1.3059	0.3201 1.2706	0.3241 1.3066	0.3035 1.3080
0.5555 1.3105	0.3126 1.3046	0.3242 1.2909	0.3281 1.3125	0.3062 1.3121
0.5582 1.3093	0.3166 1.3140	0.3282 1.2994	0.3321 1.2981	0.3088 1.3140
0.5609 1.3071	0.3206 1.3052	0.3321 1.2991	0.3360 1.2932	0.3115 1.3170
0.5636 1.3028	0.3246 1.3232	0.3361 1.3051	0.3400 1.2926	0.3142 1.3157
0.5663 1.3123	0.3286 1.3294	0.3401 1.3100	0.3440 1.2929	0.3170 1.3230
0.5690 1.3058	0.3325 1.3186	0.3441 1.3244	0.3480 1.2984	0.3434 1.3198
0.5717 1.3068	0.3365 1.3229	0.3480 1.3218	0.3519 1.2888	0.3460 1.3178
0.5744 1.3089	0.3405 1.3133	0.3520 1.3212	0.3559 1.2930	0.3487 1.3148
0.5771 1.3142	0.3445 1.3198	0.3560 1.3335	0.3599 1.2928	0.3514 1.3182
0.5798 1.3109	0.3485 1.3136	0.3620 1.3340	0.3638 1.2966	0.3541 1.3195
0.5825 1.3162	0.3525 1.3138	0.3680 1.3326	0.3678 1.3068	0.3568 1.3102
0.5852 1.3119	0.3565 1.3109	0.3719 1.3346	0.3718 1.3159	0.3595 1.3094
0.5879 1.3109	0.3605 1.3037	0.3759 1.3347	0.3758 1.3217	0.3622 1.3075
0.5906 1.3162	0.3684 1.2979	0.3799 1.3327	0.3797 1.3201	0.3649 1.3024
0.5934 1.3183	0.3724 1.2960	0.3839 1.3202	0.3837 1.3355	0.3676 1.2983
0.5961 1.3141	0.3764 1.2983	0.3879 1.3132	0.3877 1.3329	0.3703 1.2921
0.5988 1.3258	0.3804 1.2974	0.3918 1.3232	0.3917 1.3326	0.3730 1.2912
0.6043 1.3227	0.3844 1.2974	0.3958 1.3162	0.3957 1.3281	0.3757 1.2902
0.6214 1.3037	0.3884 1.2984	0.3998 1.3146	0.3996 1.3259	0.3784 1.2914
0.6241 1.2995	0.3943 1.2982	0.4038 1.3023	0.4051 1.3409	0.3811 1.2946
0.6268 1.3070	0.4043 1.3018	0.4077 1.2963	0.4091 1.3274	0.3865 1.2945
0.6295 1.3007	0.4083 1.3079	0.4117 1.2987	0.4130 1.3309	0.3892 1.2943
0.6322 1.2976	0.4123 1.3140	0.4157 1.2883	0.4170 1.3208	0.3919 1.3070
0.6349 1.2997	0.4163 1.3190	0.4197 1.2863	0.4210 1.3160	0.3946 1.2940
2455896 +	0.4223 1.3218	0.4237 1.2852	0.4250 1.3037	0.3973 1.3023
0.4536 1.3004	0.4282 1.3226	0.4276 1.2969	0.4290 1.2990	0.4000 1.3105
0.4563 1.2933	0.4322 1.3183	0.4316 1.2966	0.4329 1.3069	0.4026 1.3060
0.4590 1.3000	0.4362 1.3205	0.4356 1.3049	2455980 +	0.4053 1.3142
0.4617 1.2918	0.4402 1.3228	2455979 +	0.2514 1.3101	0.4080 1.3182
0.4644 1.2963	0.4442 1.3187	0.2565 1.2884	0.2541 1.3017	0.4107 1.3105
0.4672 1.2955	0.4482 1.3158	0.2605 1.3010	0.2568 1.3082	0.4134 1.3091
0.4699 1.2946	0.4521 1.3172	0.2645 1.2964	0.2595 1.3062	0.4162 1.3206
0.4726 1.2948	0.4561 1.3036	0.2684 1.2982	0.2622 1.3000	0.4188 1.3311
0.4753 1.2938	0.4601 1.3093	0.2724 1.3084	0.2649 1.3065	0.4215 1.3235
0.4780 1.2949	0.4641 1.3022	0.2764 1.3218	0.2676 1.3023	0.4242 1.3340
0.4807 1.2992	0.4680 1.3035	0.2804 1.3351	0.2703 1.2928	0.4270 1.3211
0.4834 1.2981	0.4720 1.2930	0.2843 1.3251	0.2729 1.2982	0.4296 1.3328
0.4861 1.2991	0.4760 1.2953	0.2883 1.3225	0.2792 1.3026	0.4324 1.3297
2455956 +	0.4801 1.2943	0.2923 1.3371	0.2819 1.2919	
0.2685 1.2954	2455978 +	0.2963 1.3337	0.2846 1.2983	

R light curves of CoRoT 10274568

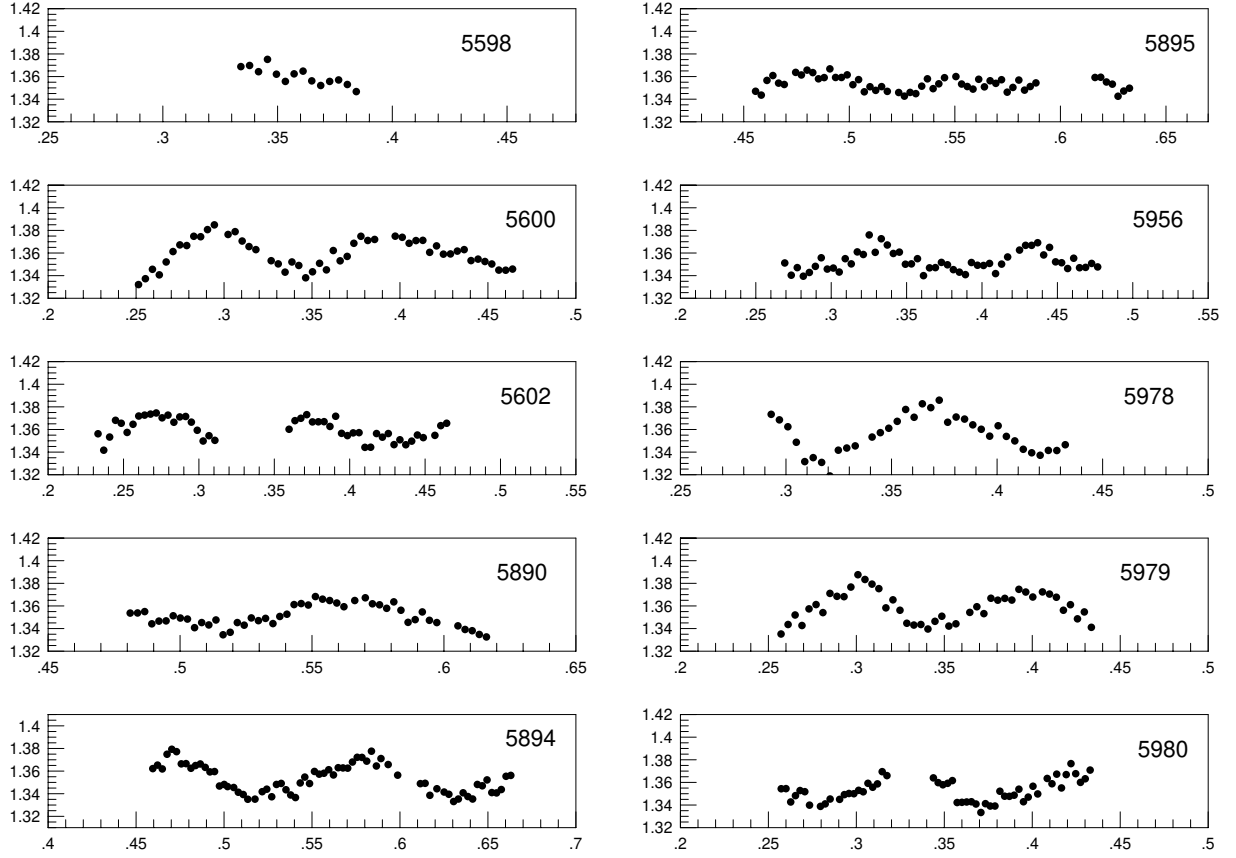


Figure 54: Light curves of Johnson *R* observations on CoRoT 10274586

Table 69. Johnson *R* observations of CoRoT 10274568

CoRoT	0.3804	1.3530	0.3023	1.3764	0.3660	1.3531	0.4326	1.3617	
10274568 - C	0.3843	1.3467	0.3063	1.3789	0.3700	1.3570	0.4365	1.3630	
2455598 +	2455600 +		0.3103	1.3706	0.3738	1.3686	0.4404	1.3533	
0.3340	1.3688	0.2514	1.3321	0.3142	1.3657	0.3778	1.3748	0.4444	1.3546
0.3378	1.3698	0.2553	1.3373	0.3181	1.3630	0.3817	1.3711	0.4483	1.3525
0.3417	1.3643	0.2593	1.3456	0.3268	1.3532	0.3856	1.3720	0.4522	1.3503
0.3456	1.3752	0.2632	1.3407	0.3308	1.3504	0.3973	1.3749	0.4562	1.3449
0.3495	1.3621	0.2671	1.3521	0.3347	1.3431	0.4013	1.3739	0.4601	1.3448
0.3534	1.3557	0.2710	1.3613	0.3386	1.3521	0.4052	1.3686	0.4640	1.3458
0.3572	1.3624	0.2749	1.3672	0.3425	1.3490	0.4091	1.3710	2455602 +	
0.3611	1.3648	0.2788	1.3666	0.3464	1.3381	0.4130	1.3712	0.2331	1.3562
0.3649	1.3562	0.2828	1.3748	0.3503	1.3434	0.4169	1.3606	0.2369	1.3417
0.3688	1.3521	0.2867	1.3744	0.3543	1.3509	0.4208	1.3663	0.2408	1.3533
0.3727	1.3557	0.2906	1.3807	0.3582	1.3451	0.4247	1.3590	0.2447	1.3681
0.3766	1.3570	0.2945	1.3849	0.3621	1.3622	0.4287	1.3592	0.2485	1.3655

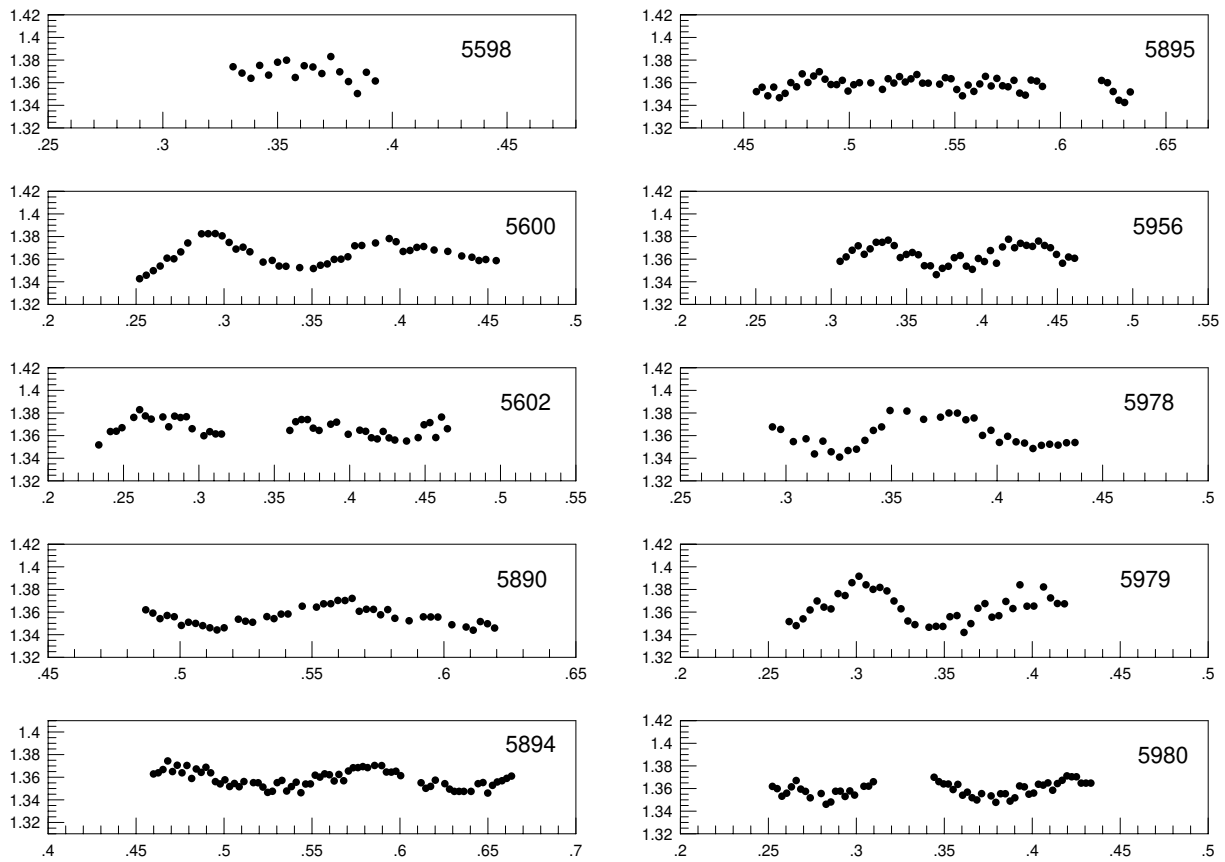
0.2524 1.3574	0.4893 1.3442	0.4595 1.3622	0.5892 1.3711	0.5261 1.3427
0.2563 1.3646	0.4920 1.3466	0.4622 1.3653	0.5933 1.3658	0.5288 1.3460
0.2601 1.3719	0.4947 1.3468	0.4649 1.3619	0.5987 1.3564	0.5315 1.3449
0.2640 1.3727	0.4974 1.3513	0.4676 1.3749	0.6116 1.3489	0.5343 1.3515
0.2679 1.3736	0.5001 1.3493	0.4703 1.3793	0.6143 1.3492	0.5370 1.3580
0.2717 1.3746	0.5028 1.3484	0.4730 1.3772	0.6170 1.3386	0.5397 1.3493
0.2756 1.3703	0.5055 1.3408	0.4757 1.3664	0.6210 1.3444	0.5424 1.3536
0.2795 1.3727	0.5082 1.3453	0.4784 1.3666	0.6251 1.3415	0.5451 1.3590
0.2834 1.3664	0.5109 1.3432	0.4812 1.3625	0.6278 1.3395	0.5505 1.3600
0.2873 1.3711	0.5136 1.3476	0.4838 1.3649	0.6305 1.3331	0.5532 1.3534
0.2912 1.3715	0.5163 1.3345	0.4865 1.3663	0.6332 1.3353	0.5559 1.3512
0.2950 1.3665	0.5190 1.3367	0.4893 1.3633	0.6359 1.3408	0.5586 1.3489
0.2989 1.3593	0.5217 1.3453	0.4920 1.3593	0.6386 1.3375	0.5613 1.3576
0.3028 1.3498	0.5243 1.3430	0.4946 1.3596	0.6413 1.3353	0.5640 1.3509
0.3067 1.3545	0.5270 1.3494	0.4974 1.3468	0.6440 1.3482	0.5667 1.3563
0.3106 1.3504	0.5297 1.3470	0.5001 1.3482	0.6468 1.3470	0.5694 1.3540
0.3598 1.3602	0.5324 1.3490	0.5020 1.3463	0.6495 1.3522	0.5721 1.3572
0.3637 1.3678	0.5352 1.3444	0.5055 1.3455	0.6522 1.3410	0.5748 1.3462
0.3676 1.3699	0.5378 1.3507	0.5081 1.3413	0.6549 1.3407	0.5775 1.3504
0.3715 1.3731	0.5405 1.3527	0.5109 1.3393	0.6576 1.3437	0.5803 1.3569
0.3753 1.3667	0.5432 1.3612	0.5135 1.3351	0.6603 1.3554	0.5830 1.3480
0.3792 1.3668	0.5459 1.3621	0.5176 1.3352	0.6630 1.3562	0.5857 1.3512
0.3830 1.3669	0.5486 1.3608	0.5217 1.3418	2455895 +	0.5884 1.3544
0.3869 1.3627	0.5513 1.3683	0.5243 1.3440	0.4556 1.3470	0.6164 1.3592
0.3907 1.3717	0.5540 1.3660	0.5271 1.3373	0.4583 1.3436	0.6191 1.3594
0.3946 1.3566	0.5567 1.3648	0.5298 1.3482	0.4610 1.3566	0.6218 1.3552
0.3985 1.3546	0.5594 1.3626	0.5325 1.3491	0.4638 1.3609	0.6246 1.3533
0.4023 1.3570	0.5621 1.3593	0.5352 1.3435	0.4665 1.3542	0.6273 1.3426
0.4062 1.3572	0.5662 1.3648	0.5379 1.3389	0.4692 1.3530	0.6300 1.3472
0.4101 1.3442	0.5702 1.3672	0.5406 1.3366	0.4746 1.3637	0.6327 1.3497
0.4139 1.3443	0.5729 1.3619	0.5433 1.3495	0.4773 1.3614	2455896 +
0.4178 1.3564	0.5756 1.3610	0.5459 1.3547	0.4800 1.3657	0.4541 1.3569
0.4217 1.3532	0.5783 1.3579	0.5486 1.3490	0.4827 1.3635	0.4567 1.3517
0.4256 1.3564	0.5810 1.3636	0.5514 1.3597	0.4854 1.3580	0.4595 1.3498
0.4294 1.3466	0.5837 1.3562	0.5541 1.3573	0.4881 1.3591	0.4622 1.3391
0.4333 1.3509	0.5864 1.3455	0.5568 1.3581	0.4908 1.3668	0.4649 1.3414
0.4372 1.3465	0.5891 1.3479	0.5595 1.3612	0.4935 1.3592	0.4703 1.3395
0.4411 1.3497	0.5918 1.3547	0.5622 1.3566	0.4963 1.3592	0.4730 1.3439
0.4449 1.3551	0.5945 1.3473	0.5649 1.3630	0.4990 1.3615	0.4771 1.3417
0.4488 1.3528	0.5973 1.3453	0.5676 1.3628	0.5017 1.3528	0.4811 1.3438
0.4565 1.3548	0.6053 1.3424	0.5703 1.3626	0.5044 1.3573	0.4838 1.3481
0.4604 1.3634	0.6080 1.3392	0.5730 1.3680	0.5071 1.3465	0.4892 1.3500
0.4643 1.3655	0.6107 1.3381	0.5757 1.3722	0.5098 1.3510	0.4920 1.3542
2455890 +	0.6134 1.3348	0.5784 1.3721	0.5125 1.3478	0.4947 1.3573
0.4811 1.3537	0.6161 1.3326	0.5811 1.3688	0.5153 1.3511	0.4974 1.3603
0.4839 1.3538	0.6188 1.3304	0.5838 1.3776	0.5180 1.3469	2455956 +
0.4866 1.3550	2455894 +	0.5866 1.3645	0.5234 1.3459	0.2692 1.3512

0.2735 1.3404	0.4289 1.3668	0.3925 1.3602	0.3645 1.3543	0.3147 1.3695
0.2775 1.3471	0.4329 1.3668	0.3965 1.3541	0.3685 1.3593	0.3174 1.3660
0.2815 1.3395	0.4369 1.3691	0.4005 1.3633	0.3725 1.3532	0.3438 1.3640
0.2855 1.3428	0.4409 1.3583	0.4044 1.3539	0.3765 1.3668	0.3465 1.3598
0.2895 1.3482	0.4448 1.3650	0.4084 1.3499	0.3804 1.3651	0.3492 1.3579
0.2934 1.3558	0.4488 1.3522	0.4124 1.3425	0.3844 1.3667	0.3519 1.3592
0.2974 1.3458	0.4528 1.3514	0.4164 1.3394	0.3884 1.3652	0.3546 1.3616
0.3014 1.3467	0.4568 1.3463	0.4204 1.3372	0.3924 1.3747	0.3573 1.3422
0.3053 1.3432	0.4608 1.3554	0.4243 1.3415	0.3963 1.3723	0.3600 1.3424
0.3093 1.3550	0.4647 1.3470	0.4283 1.3414	0.4003 1.3679	0.3627 1.3427
0.3133 1.3504	0.4687 1.3473	0.4323 1.3465	0.4058 1.3724	0.3654 1.3429
0.3173 1.3610	0.4727 1.3508	2455979 +	0.4098 1.3705	0.3680 1.3409
0.3213 1.3587	0.4767 1.3477	0.2572 1.3352	0.4137 1.3677	0.3708 1.3334
0.3252 1.3760	2455978 +	0.2612 1.3436	0.4177 1.3562	0.3734 1.3412
0.3292 1.3606	0.2930 1.3734	0.2652 1.3520	0.4217 1.3611	0.3761 1.3391
0.3332 1.3726	0.2969 1.3685	0.2691 1.3427	0.4257 1.3486	0.3788 1.3391
0.3372 1.3671	0.3009 1.3624	0.2731 1.3574	0.4296 1.3547	0.3816 1.3522
0.3412 1.3596	0.3049 1.3487	0.2771 1.3612	0.4336 1.3411	0.3843 1.3478
0.3452 1.3608	0.3089 1.3316	0.2810 1.3541	2455980 +	0.3870 1.3477
0.3492 1.3501	0.3129 1.3351	0.2850 1.3711	0.2573 1.3544	0.3897 1.3487
0.3532 1.3504	0.3169 1.3309	0.2890 1.3685	0.2600 1.3545	0.3924 1.3540
0.3572 1.3550	0.3208 1.3189	0.2930 1.3682	0.2627 1.3427	0.3950 1.3429
0.3612 1.3400	0.3248 1.3417	0.2969 1.3767	0.2654 1.3483	0.3977 1.3470
0.3652 1.3469	0.3288 1.3436	0.3009 1.3876	0.2680 1.3528	0.4004 1.3566
0.3691 1.3471	0.3328 1.3455	0.3049 1.3834	0.2707 1.3518	0.4031 1.3498
0.3731 1.3517	0.3408 1.3533	0.3089 1.3793	0.2734 1.3399	0.4085 1.3635
0.3771 1.3496	0.3447 1.3572	0.3128 1.3753	0.2796 1.3388	0.4112 1.3588
0.3810 1.3453	0.3487 1.3611	0.3168 1.3583	0.2823 1.3410	0.4139 1.3673
0.3850 1.3431	0.3527 1.3672	0.3208 1.3654	0.2851 1.3453	0.4166 1.3551
0.3890 1.3409	0.3567 1.3777	0.3248 1.3562	0.2905 1.3450	0.4193 1.3669
0.3930 1.3516	0.3607 1.3708	0.3287 1.3447	0.2932 1.3492	0.4220 1.3766
0.3970 1.3492	0.3646 1.3827	0.3327 1.3431	0.2958 1.3502	0.4247 1.3677
0.4010 1.3490	0.3686 1.3793	0.3367 1.3436	0.2986 1.3500	0.4274 1.3600
0.4050 1.3508	0.3726 1.3859	0.3407 1.3396	0.3013 1.3530	0.4301 1.3632
0.4090 1.3418	0.3766 1.3664	0.3447 1.3464	0.3039 1.3517	0.4329 1.3709
0.4130 1.3502	0.3806 1.3710	0.3486 1.3509	0.3066 1.3592	
0.4170 1.3565	0.3846 1.3692	0.3526 1.3422	0.3093 1.3557	
0.4249 1.3626	0.3885 1.3641	0.3566 1.3442	0.3120 1.3587	

Table 70. Johnson *I* observations of CoRoT 10274568

CoRoT	0.3384 1.3639	0.3577 1.3646	0.3771 1.3696	2455600 +
102749568 - C	0.3422 1.3753	0.3616 1.3750	0.3809 1.3610	0.2520 1.3427
2455598 +	0.3461 1.3667	0.3654 1.3739	0.3848 1.3504	0.2558 1.3458
0.3306 1.3741	0.3500 1.3781	0.3693 1.3681	0.3887 1.3692	0.2598 1.3498
0.3345 1.3685	0.3539 1.3799	0.3732 1.3831	0.3926 1.3615	0.2637 1.3539

I light curves of CoRoT 10274568

Figure 55: Light curves of Johnson *I* observations on CoRoT 10274568

0.2676 1.3609	0.3626 1.3598	0.2336 1.3518	0.3681 1.3742	0.4648 1.3661
0.2715 1.3603	0.3665 1.3600	0.2413 1.3636	0.3720 1.3742	2455890 +
0.2754 1.3664	0.3704 1.3621	0.2452 1.3639	0.3758 1.3666	0.4870 1.3620
0.2794 1.3743	0.3743 1.3718	0.2490 1.3670	0.3797 1.3646	0.4897 1.3591
0.2872 1.3824	0.3783 1.3721	0.2568 1.3761	0.3874 1.3701	0.4924 1.3542
0.2910 1.3825	0.3861 1.3743	0.2607 1.3829	0.3913 1.3719	0.4951 1.3570
0.2950 1.3826	0.3939 1.3782	0.2645 1.3774	0.3990 1.3612	0.4978 1.3559
0.2989 1.3806	0.3978 1.3754	0.2684 1.3746	0.4067 1.3648	0.5005 1.3482
0.3029 1.3748	0.4018 1.3668	0.2761 1.3765	0.4106 1.3638	0.5032 1.3510
0.3068 1.3689	0.4057 1.3677	0.2800 1.3678	0.4144 1.3581	0.5059 1.3500
0.3108 1.3706	0.4096 1.3704	0.2839 1.3772	0.4183 1.3571	0.5086 1.3480
0.3147 1.3665	0.4135 1.3712	0.2878 1.3760	0.4222 1.3637	0.5113 1.3461
0.3222 1.3574	0.4194 1.3681	0.2917 1.3767	0.4261 1.3580	0.5140 1.3442
0.3274 1.3589	0.4272 1.3669	0.2955 1.3661	0.4299 1.3561	0.5167 1.3461
0.3313 1.3539	0.4351 1.3628	0.3033 1.3599	0.4377 1.3552	0.5221 1.3537
0.3352 1.3537	0.4409 1.3617	0.3072 1.3635	0.4454 1.3582	0.5248 1.3519
0.3430 1.3525	0.4449 1.3588	0.3111 1.3615	0.4493 1.3696	0.5275 1.3510
0.3508 1.3517	0.4488 1.3597	0.3150 1.3614	0.4532 1.3715	0.5329 1.3560
0.3548 1.3546	0.4547 1.3587	0.3603 1.3646	0.4571 1.3583	0.5356 1.3542
0.3587 1.3558	2455602 +	0.3642 1.3723	0.4609 1.3764	0.5383 1.3582

0.5409 1.3583	0.5221 1.3513	2455895 +	0.5888 1.3614	0.3777 1.3537
0.5463 1.3652	0.5248 1.3466	0.4560 1.3521	0.5915 1.3567	0.3816 1.3613
0.5517 1.3644	0.5275 1.3476	0.4587 1.3560	0.6195 1.3620	0.3856 1.3632
0.5544 1.3673	0.5302 1.3552	0.4614 1.3484	0.6223 1.3600	0.3896 1.3538
0.5571 1.3674	0.5329 1.3572	0.4642 1.3561	0.6250 1.3522	0.3936 1.3510
0.5598 1.3703	0.5356 1.3478	0.4669 1.3467	0.6277 1.3445	0.3976 1.3606
0.5625 1.3702	0.5383 1.3517	0.4696 1.3506	0.6304 1.3425	0.4016 1.3579
0.5652 1.3721	0.5410 1.3556	0.4723 1.3601	0.6331 1.3518	0.4056 1.3676
0.5679 1.3607	0.5437 1.3463	0.4750 1.3564	2455896 +	0.4096 1.3564
0.5706 1.3625	0.5464 1.3540	0.4777 1.3678	0.4545 1.3587	0.4136 1.3708
0.5733 1.3624	0.5491 1.3541	0.4804 1.3602	0.4572 1.3623	0.4176 1.3776
0.5760 1.3576	0.5518 1.3618	0.4831 1.3659	0.4599 1.3574	0.4216 1.3701
0.5787 1.3622	0.5545 1.3601	0.4858 1.3697	0.4626 1.3554	0.4255 1.3740
0.5814 1.3545	0.5572 1.3630	0.4885 1.3631	0.4653 1.3515	0.4295 1.3722
0.5868 1.3523	0.5599 1.3622	0.4913 1.3584	0.4680 1.3515	0.4335 1.3713
0.5922 1.3558	0.5626 1.3567	0.4940 1.3583	0.4735 1.3571	0.4375 1.3760
0.5950 1.3557	0.5653 1.3625	0.4967 1.3621	0.4762 1.3486	0.4415 1.3721
0.5977 1.3556	0.5680 1.3569	0.4994 1.3526	0.4789 1.3514	0.4454 1.3701
0.6030 1.3488	0.5707 1.3655	0.5021 1.3582	0.4816 1.3458	0.4494 1.3642
0.6084 1.3468	0.5734 1.3684	0.5048 1.3600	0.4843 1.3458	0.4534 1.3564
0.6111 1.3440	0.5761 1.3685	0.5102 1.3599	0.4870 1.3554	0.4574 1.3619
0.6138 1.3516	0.5789 1.3694	0.5157 1.3541	0.4897 1.3498	0.4614 1.3608
0.6165 1.3497	0.5816 1.3685	0.5184 1.3635	0.4924 1.3537	2455978 +
0.6192 1.3459	0.5856 1.3704	0.5211 1.3597	0.4951 1.3538	0.2936 1.3677
2455894 +	0.5896 1.3703	0.5238 1.3654	0.4978 1.3596	0.2975 1.3655
0.4599 1.3629	0.5923 1.3646	0.5265 1.3606	0.5005 1.3521	0.3035 1.3547
0.4626 1.3639	0.5951 1.3645	0.5292 1.3634	0.5032 1.3551	0.3095 1.3572
0.4653 1.3668	0.5977 1.3653	0.5320 1.3672	0.5059 1.3580	0.3135 1.3438
0.4680 1.3744	0.6004 1.3614	0.5347 1.3596	2455956 +	0.3175 1.3551
0.4707 1.3650	0.6120 1.3551	0.5374 1.3596	0.3059 1.3581	0.3214 1.3457
0.4734 1.3706	0.6147 1.3502	0.5428 1.3587	0.3099 1.3620	0.3254 1.3410
0.4761 1.3639	0.6174 1.3519	0.5455 1.3644	0.3139 1.3679	0.3294 1.3468
0.4789 1.3704	0.6201 1.3574	0.5482 1.3635	0.3179 1.3718	0.3334 1.3480
0.4816 1.3589	0.6255 1.3543	0.5509 1.3540	0.3219 1.3643	0.3374 1.3558
0.4842 1.3673	0.6282 1.3495	0.5536 1.3484	0.3258 1.3691	0.3414 1.3646
0.4870 1.3643	0.6309 1.3475	0.5563 1.3579	0.3298 1.3749	0.3453 1.3677
0.4897 1.3688	0.6336 1.3475	0.5590 1.3523	0.3338 1.3749	0.3493 1.3822
0.4924 1.3639	0.6363 1.3475	0.5618 1.3589	0.3378 1.3768	0.3573 1.3817
0.4951 1.3561	0.6404 1.3475	0.5645 1.3656	0.3418 1.3720	0.3652 1.3744
0.4978 1.3541	0.6444 1.3543	0.5672 1.3571	0.3458 1.3614	0.3732 1.3763
0.5005 1.3577	0.6472 1.3553	0.5699 1.3638	0.3498 1.3642	0.3772 1.3800
0.5032 1.3518	0.6499 1.3460	0.5726 1.3573	0.3538 1.3659	0.3812 1.3799
0.5059 1.3545	0.6526 1.3528	0.5752 1.3564	0.3578 1.3639	0.3852 1.3740
0.5086 1.3516	0.6553 1.3558	0.5780 1.3621	0.3618 1.3542	0.3891 1.3756
0.5113 1.3562	0.6580 1.3569	0.5807 1.3508	0.3658 1.3541	0.3931 1.3602
0.5167 1.3552	0.6607 1.3590	0.5834 1.3490	0.3697 1.3463	0.3971 1.3647
0.5194 1.3551	0.6634 1.3610	0.5861 1.3623	0.3737 1.3519	0.4011 1.3540

0.4050 1.3594	0.3055 1.3841	0.3930 1.3841	0.2909 1.3577	0.3847 1.3554
0.4090 1.3545	0.3095 1.3801	0.3970 1.3652	0.2936 1.3530	0.3874 1.3489
0.4130 1.3534	0.3134 1.3818	0.4009 1.3653	0.2963 1.3579	0.3901 1.3518
0.4170 1.3486	0.3174 1.3787	0.4064 1.3822	0.2990 1.3542	0.3928 1.3623
0.4210 1.3514	0.3214 1.3698	0.4104 1.3725	0.3043 1.3620	0.3955 1.3615
0.4249 1.3524	0.3254 1.3629	0.4143 1.3676	0.3070 1.3621	0.3981 1.3550
0.4289 1.3516	0.3293 1.3521	0.4183 1.3673	0.3097 1.3660	0.4008 1.3560
0.4329 1.3537	0.3333 1.3489	2455980 +	0.3442 1.3700	0.4035 1.3638
0.4369 1.3539	0.3413 1.3466	0.2523 1.3619	0.3469 1.3661	0.4062 1.3630
2455979 +	0.3453 1.3474	0.2550 1.3599	0.3496 1.3641	0.4089 1.3650
0.2618 1.3516	0.3492 1.3473	0.2577 1.3532	0.3523 1.3640	0.4116 1.3585
0.2658 1.3480	0.3532 1.3559	0.2604 1.3559	0.3550 1.3591	0.4143 1.3644
0.2697 1.3540	0.3572 1.3569	0.2631 1.3615	0.3577 1.3637	0.4170 1.3673
0.2737 1.3619	0.3612 1.3420	0.2658 1.3671	0.3604 1.3541	0.4197 1.3712
0.2777 1.3698	0.3651 1.3498	0.2684 1.3595	0.3631 1.3568	0.4224 1.3704
0.2816 1.3644	0.3691 1.3634	0.2711 1.3575	0.3658 1.3519	0.4251 1.3704
0.2856 1.3628	0.3731 1.3675	0.2738 1.3518	0.3685 1.3499	0.4278 1.3648
0.2896 1.3763	0.3771 1.3555	0.2800 1.3556	0.3712 1.3555	0.4305 1.3648
0.2936 1.3746	0.3810 1.3568	0.2828 1.3461	0.3766 1.3535	0.4333 1.3648
0.2975 1.3860	0.3850 1.3694	0.2855 1.3481	0.3793 1.3478	
0.3015 1.3917	0.3890 1.3631	0.2882 1.3576	0.3820 1.3554	

The unprecedented long and precise space observations allowed us to get closer to the main aims, that is to the asteroseismology, to know more on the structure of the stars. In some stars, where the asymptotic theory is valid, the pulsation modes can be identified by the regular patterns, by regular spacing. However, for CoRoT 102749568, as a δ Scuti star, the asymptotic theory does not work, which means it is not predicted theoretically that regular pattern/spacing of the pulsational frequencies could be found. As Paparó and Sterken (2000) found regular spacing for θ Tuc, it was obvious that we searched for regular spacing among the pulsation frequencies of CoRoT 102749568. The multicolor photometry allowed us to use the mode identification method based on the relation of the amplitude ratio and phase differences of the frequencies. Mode identification (l and n values) was given for the frequencies of the highest amplitude. The Italian contributor, David Gandolfi, who was working at that time at ESTEC/ESA, Netherland, supported the investigation by spectroscopy. The Spanish colleagues, Andy Moya and Juan Carlos Suárez made the modelling. As conclusion of the complex investigation, the physical parameters of CoRoT 102749568 were derived by both spectroscopy, photometry and modelling. The finding of regular spacing in non-asymptotic stars can hopefully inspire theoretical investigation in this direction.

Later M. Paparó visually investigated about 100 δ Scuti stars observed by the CoRoT mission and found systematic patterns in the pulsation frequencies for most of the sampled stars. Finally, two papers were published for the detailed investigation, Paparó et al. 2016 a, and b. Since there are many observations for δ Scuti stars by CoRoT, Kepler and TESS, similar investigations are highly suggested on the space data.

The archived file of the Konkoly 21 = CoRoT 102749568 is K21.arch.

SHORTER RUNS ON δ Scuti STARS

In the previous sessions well-observed δ Scuti stars were discussed, with season-to-season observations, with multi-site international campaigns including even observations on three continents and data from space. However, there were targets with doubtful light variation or unconfirmed variability (DL Dra = HR 5492 or KW 385). The Praesepe cluster's stars were checked for members with light variability. Shorter Hungarian contributions were obtained for a well-known δ Scuti star, 4 CVn and a γ Doradus star. The data on a challenging target, on ϵ Cep, was not conclusively investigated, so no published paper is connected to these data. Although these observations are not world-changing, but I decided to include them in this publication, not to lose them for the future generations.

DL Dra = HR 5492 or ER Dra = HR 5437

Two stars are mentioned in the title, since both of them were connected to light variation of these stars. The DL Dra = HR 5492 has a long history. It was discovered by J. R. Percy as a variable star (Percy, 1973). The comparison star was HR 5437. That was the reason why the light variability of these two stars were connected to each other. Later some further observations, mostly by Italian colleagues (Guerrero et al. 1978, Bossi et al. 1981) were obtained and they questioned whether DL Dra = HR 5492 is a variable star. They concluded that the light variation might belong to the HR 5437, to the comparison star. To clear up the situation, additional stars were included in further observations beside HR 5437, as comparison or check stars. These are HD 130173, HD 129226 and HD 129865.

Table 71 List of the observed stars

Nr	Star	V
1	HR 5492	6.25
2	HR 5437	6.24
3	HD 130173	6.60
4	HD 129865	8.0
5	HD 129226	8.4

As a sensitive reaction, observation of DL Dra = HR 5492 was included in the project of Konkoly Observatory from 1986-1988. Independent data collection were carried out both in China and Hungary in 1988 in an overlapping interval. Jiang et al. (1988) clearly proved that HR 5437 is a δ Scuti type variable star whose amplitude and period are approximately 0.02 mag and 2 hours, respectively. Using both the Hungarian and the Chinese observations, a check was made for the different comparisons and DL Dra, published in Paparó et al. (1990). Only the light curves of both the Hungarian and Chinese observations were shown, but the data were not presented. Later, the Chinese data were separately published in the paper "The period analysis of the new δ Scuti star HR 5437" by Li et al. (1991). In the following years more observations were obtained for HR 5437 in the Chinese and Spanish observatories, however, we did not continue

the observation of HR 5437. Nevertheless, here we publish the Hungarian observations obtained over 1986-87-88 in Johnson V colour.

After the first observations, we also used different comparisons as we published in the Paparó et al. (1990) paper. In Table 71 all the stars were listed that were observed in the DL Dra project. For easier further reference we assigned numbers to the different stars presented in the first column. The V brightness taken from the literature are also given in Table 71.

Table 72. Journal of the observations connected to DL Dra

Date	HJD 2400000+	Length days	No. of obs.	Stars
March 18/19 1986	46508	.2524	61	1,2
Jan 20/21 1987	46816	.1520	42	1,2
Feb 5/6 1987	46832	.2188	62	1,2
Apr 29/30 1987	46915	.2170	67	1,2
Apr 30/May 1 1987	46916	.2286	71	1,2
Feb 3/4 1988	47195	.2462	77	1,2
Feb 14/15 1988	47206	.1642	51	1,2
March 6/7 1988	47227	.1298	25	1,2,4
March 18/19 1988	47239	.1427	32	1,3,5
Apr 18/19 1988	47270	.2084	49	1,2,3
Apr 24/25 1988	47276	.2311	52	1,2,3

The journal of the observations are given in Table 72. The Julian dates, the length of the nightly observation, the number of the measurements are also given in Table 72. The last column gives the assigned number of the stars that were observed on the given night. As we see the primary star, the DL Dra = HR 5492 was observed on each night. As we discussed in the observational history, this star proved to be a constant star. If it shows some variation it must be smaller than hundreds of a magnitude. However, star number 2, ER Dra = HR 5437 was also observed almost on each night, except JD 2447239. Due to the observation of both the primary and secondary, the HR 5492 – HR 5436, or HR 5437 – HR 5492 differential light curves could be derived for each nights. These light curves are given in Figure 56. Since the brightness of these two stars differ only with a 0.01 magnitude, after so many years, it was hard to clear up when we changed the reduction from the primary to the secondary star. In most of the panels, where only the JD are given in the label, the differential light curve of HR 5492 – HR 5437 are shown. In the last three panels on the right side we marked the HR 5437 – HR 5492 in the labels beside the JD value. The data for HR 5492 – HR 5437 are given in Table 73, while the data for HR 5437 – HR 5492 are given in Table 74.

Table 73. The data for the HR5492 – HR5437 differential light curves

HR 5492 – HR	0.3523 0.0066	0.3685 0.0161	0.3829 0.0170	0.3988 0.0169
5437	0.3561 0.0104	0.3712 0.0199	0.3866 0.0123	0.4036 0.0195
2446508 +	0.3607 0.0104	0.3750 0.0176	0.3900 0.0193	0.4070 0.0156
0.3487 0.0066	0.3641 0.0160	0.3794 0.0169	0.3953 0.0153	0.4107 0.0239

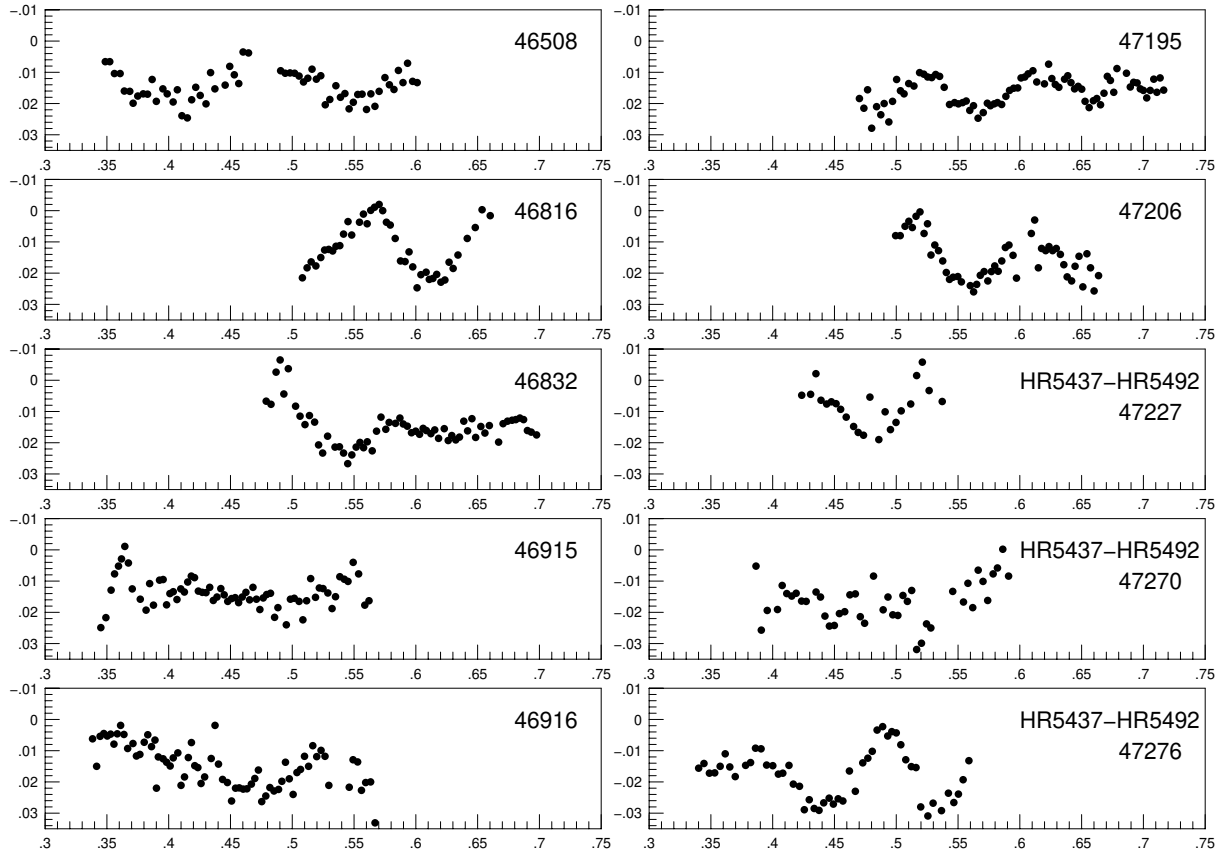


Figure 56: Light curves of HR 5492 – HR 5437 or HR 5437 – HR 5492

0.4151 0.0246	0.5160 0.0090	0.5896 0.0133	0.5606 0.0042	0.6269 0.0165
0.4186 0.0188	0.5195 0.0122	0.5933 0.0071	0.5635 -0.0001	0.6302 0.0185
0.4219 0.0148	0.5231 0.0111	0.5974 0.0129	0.5666 -0.0011	0.6341 0.0142
0.4255 0.0174	0.5267 0.0204	0.6011 0.0133	0.5703 -0.0020	0.6416 0.0089
0.4302 0.0201	0.5304 0.0187	2446816 +	0.5732 0.0000	0.6481 0.0054
0.4339 0.0101	0.5353 0.0143	0.5082 0.0215	0.5762 0.0037	0.6536 -0.0003
0.4374 0.0153	0.5390 0.0180	0.5120 0.0183	0.5793 0.0046	0.6602 0.0016
0.4457 0.0141	0.5426 0.0168	0.5153 0.0164	0.5833 0.0089	2446832 +
0.4494 0.0081	0.5460 0.0217	0.5191 0.0177	0.5876 0.0161	0.4789 0.0067
0.4531 0.0108	0.5494 0.0196	0.5231 0.0150	0.5913 0.0163	0.4828 0.0077
0.4567 0.0136	0.5530 0.0171	0.5262 0.0126	0.5945 0.0132	0.4869 -0.0026
0.4602 0.0035	0.5565 0.0170	0.5295 0.0124	0.5975 0.0180	0.4902 -0.0065
0.4646 0.0038	0.5601 0.0219	0.5327 0.0129	0.6010 0.0247	0.4932 0.0044
0.4906 0.0095	0.5636 0.0169	0.5354 0.0114	0.6041 0.0205	0.4968 -0.0037
0.4943 0.0103	0.5669 0.0209	0.5385 0.0112	0.6083 0.0197	0.5027 0.0083
0.4982 0.0102	0.5703 0.0161	0.5415 0.0075	0.6109 0.0220	0.5063 0.0115
0.5019 0.0103	0.5750 0.0117	0.5451 0.0035	0.6138 0.0217	0.5103 0.0142
0.5055 0.0112	0.5786 0.0140	0.5481 0.0078	0.6169 0.0204	0.5139 0.0113
0.5091 0.0131	0.5823 0.0155	0.5544 0.0037	0.6203 0.0229	0.5181 0.0134
0.5126 0.0119	0.5859 0.0094	0.5576 0.0011	0.6235 0.0222	0.5213 0.0207

0.5246 0.0233	0.6903 0.0161	0.4793 0.0143	0.4037 0.0123	0.5634 0.0200
0.5286 0.0179	0.6934 0.0166	0.4824 0.0139	0.4074 0.0107	0.5670 0.0331
0.5346 0.0214	0.6977 0.0175	0.4857 0.0216	0.4100 0.0211	2447195 +
0.5382 0.0213	2446915 +	0.4884 0.0185	0.4128 0.0184	0.4702 0.0184
0.5415 0.0233	0.3451 0.0249	0.4952 0.0240	0.4159 0.0122	0.4738 0.0215
0.5449 0.0267	0.3492 0.0217	0.4985 0.0158	0.4184 0.0074	0.4768 0.0156
0.5482 0.0239	0.3534 0.0129	0.5016 0.0155	0.4211 0.0148	0.4801 0.0279
0.5517 0.0214	0.3562 0.0077	0.5055 0.0165	0.4236 0.0154	0.4841 0.0210
0.5548 0.0199	0.3594 0.0052	0.5086 0.0224	0.4262 0.0205	0.4875 0.0236
0.5577 0.0216	0.3618 0.0029	0.5116 0.0163	0.4291 0.0184	0.4902 0.0200
0.5607 0.0197	0.3645 -0.0011	0.5149 0.0092	0.3901 0.0220	0.4940 0.0259
0.5647 0.0226	0.3674 0.0042	0.5188 0.0152	0.4344 0.0125	0.4970 0.0193
0.5682 0.0163	0.3705 0.0125	0.5219 0.0122	0.4375 0.0019	0.5003 0.0123
0.5718 0.0118	0.3770 0.0158	0.5249 0.0124	0.4403 0.0143	0.5034 0.0159
0.5757 0.0157	0.3817 0.0193	0.5288 0.0138	0.4436 0.0192	0.5063 0.0169
0.5784 0.0135	0.3846 0.0108	0.5322 0.0188	0.4475 0.0202	0.5101 0.0136
0.5835 0.0138	0.3877 0.0177	0.5350 0.0150	0.4509 0.0261	0.5143 0.0144
0.5871 0.0121	0.3926 0.0097	0.5385 0.0086	0.4541 0.0220	0.5189 0.0101
0.5898 0.0140	0.3955 0.0095	0.5421 0.0094	0.4571 0.0219	0.5223 0.0106
0.5931 0.0147	0.3983 0.0176	0.5451 0.0101	0.4603 0.0223	0.5254 0.0115
0.5965 0.0168	0.4010 0.0140	0.5493 0.0040	0.4633 0.0222	0.5287 0.0117
0.5999 0.0163	0.4037 0.0134	0.5537 0.0077	0.4669 0.0207	0.5319 0.0107
0.6030 0.0173	0.4067 0.0159	0.5587 0.0177	0.4697 0.0189	0.5351 0.0113
0.6059 0.0154	0.4098 0.0125	0.5621 0.0163	0.4726 0.0162	0.5388 0.0148
0.6085 0.0161	0.4127 0.0135	2446916 +	0.4753 0.0263	0.5431 0.0203
0.6122 0.0171	0.4154 0.0103	0.3384 0.0062	0.4786 0.0245	0.5472 0.0197
0.6153 0.0159	0.4183 0.0084	0.3417 0.0150	0.4819 0.0218	0.5503 0.0201
0.6184 0.0186	0.4209 0.0089	0.3445 0.0054	0.4852 0.0229	0.5537 0.0197
0.6230 0.0155	0.4240 0.0132	0.3475 0.0045	0.4889 0.0224	0.5566 0.0192
0.6262 0.0193	0.4272 0.0136	0.3503 0.0053	0.4916 0.0198	0.5595 0.0222
0.6291 0.0177	0.4302 0.0137	0.3530 0.0047	0.4945 0.0137	0.5625 0.0207
0.6323 0.0191	0.4332 0.0120	0.3557 0.0079	0.4976 0.0190	0.5662 0.0247
0.6353 0.0182	0.4361 0.0162	0.3584 0.0046	0.5007 0.0240	0.5704 0.0229
0.6388 0.0131	0.4391 0.0151	0.3611 0.0019	0.5038 0.0170	0.5737 0.0199
0.6419 0.0162	0.4422 0.0124	0.3638 0.0048	0.5067 0.0160	0.5762 0.0207
0.6454 0.0123	0.4449 0.0144	0.3668 0.0093	0.5099 0.0118	0.5792 0.0201
0.6484 0.0183	0.4478 0.0165	0.3711 0.0077	0.5132 0.0150	0.5819 0.0197
0.6526 0.0148	0.4509 0.0156	0.3739 0.0117	0.5166 0.0084	0.5853 0.0203
0.6559 0.0169	0.4538 0.0153	0.3767 0.0112	0.5198 0.0119	0.5887 0.0177
0.6595 0.0145	0.4566 0.0169	0.3802 0.0073	0.5233 0.0099	0.5917 0.0158
0.6670 0.0198	0.4595 0.0151	0.3831 0.0049	0.5265 0.0118	0.5950 0.0151
0.6706 0.0139	0.4625 0.0136	0.3861 0.0087	0.5296 0.0211	0.5983 0.0150
0.6742 0.0131	0.4655 0.0160	0.3889 0.0066	0.5461 0.0217	0.6010 0.0118
0.6779 0.0128	0.4682 0.0120	0.3916 0.0120	0.5492 0.0129	0.6040 0.0115
0.6809 0.0126	0.4710 0.0158	0.3955 0.0126	0.5529 0.0136	0.6067 0.0105
0.6842 0.0121	0.4738 0.0191	0.3983 0.0137	0.5560 0.0227	0.6106 0.0095
0.6872 0.0126	0.4765 0.0154	0.4012 0.0149	0.5594 0.0202	0.6137 0.0131

0.6199 0.0137	0.6708 0.0113	0.4995 0.0080	0.5527 0.0228	0.6150 0.0183
0.6233 0.0074	0.6733 0.0126	0.5032 0.0080	0.5599 0.0240	0.6176 0.0121
0.6259 0.0120	0.6760 0.0164	0.5071 0.0050	0.5626 0.0260	0.6209 0.0128
0.6287 0.0139	0.6786 0.0088	0.5102 0.0034	0.5651 0.0236	0.6236 0.0115
0.6316 0.0148	0.6863 0.0103	0.5130 0.0054	0.5680 0.0207	0.6265 0.0128
0.6362 0.0122	0.6894 0.0147	0.5160 0.0018	0.5711 0.0195	0.6295 0.0121
0.6388 0.0111	0.6921 0.0132	0.5192 0.0004	0.5741 0.0225	0.6328 0.0140
0.6414 0.0133	0.6949 0.0134	0.5225 0.0073	0.5770 0.0195	0.6356 0.0173
0.6443 0.0153	0.6975 0.0153	0.5253 0.0042	0.5797 0.0177	0.6383 0.0212
0.6472 0.0145	0.7000 0.0158	0.5281 0.0142	0.5825 0.0194	0.6419 0.0225
0.6501 0.0154	0.7027 0.0182	0.5312 0.0110	0.5854 0.0161	0.6447 0.0178
0.6528 0.0193	0.7055 0.0158	0.5342 0.0128	0.5883 0.0118	0.6479 0.0146
0.6561 0.0213	0.7084 0.0122	0.5376 0.0161	0.5912 0.0110	0.6510 0.0244
0.6595 0.0191	0.7109 0.0164	0.5405 0.0198	0.5945 0.0143	0.6543 0.0138
0.6623 0.0184	0.7135 0.0118	0.5431 0.0220	0.5973 0.0216	0.6572 0.0183
0.6653 0.0204	0.7164 0.0157	0.5460 0.0213	0.6093 0.0073	0.6601 0.0257
0.6681 0.0167	2447206 +	0.5498 0.0211	0.6120 0.0030	0.6637 0.0208

Table 74. The data for the HR5437 – HR5492 differential light curves

HR 5437 – HR	0.5372 –0.0068	0.4933 –0.0151	0.3531 –0.0171	0.4621 –0.0165
5492	2447270 +	0.4972 –0.0208	0.3575 –0.0150	0.4669 –0.0230
2447227 +	0.3865 –0.0052	0.5013 –0.0210	0.3616 –0.0110	0.4729 –0.0139
0.4235 –0.0048	0.3908 –0.0257	0.5054 –0.0146	0.3653 –0.0152	0.4770 –0.0124
0.4307 –0.0045	0.3956 –0.0194	0.5090 –0.0165	0.3697 –0.0183	0.4806 –0.0102
0.4350 + 0.0021	0.4039 –0.0191	0.5125 –0.0130	0.3781 –0.0147	0.4845 –0.0034
0.4391 –0.0064	0.4077 –0.0114	0.5165 –0.0319	0.3821 –0.0138	0.4890 –0.0023
0.4437 –0.0076	0.4114 –0.0140	0.5204 –0.0299	0.3861 –0.0092	0.4931 –0.0053
0.4475 –0.0069	0.4154 –0.0148	0.5245 –0.0237	0.3906 –0.0094	0.4964 –0.0039
0.4513 –0.0075	0.4190 –0.0139	0.5280 –0.0250	0.3951 –0.0146	0.5000 –0.0043
0.4550 –0.0093	0.4234 –0.0164	0.5457 –0.0133	0.4001 –0.0148	0.5037 –0.0081
0.4595 –0.0118	0.4271 –0.0165	0.5544 –0.0167	0.4046 –0.0175	0.5077 –0.0129
0.4655 –0.0148	0.4351 –0.0135	0.5580 –0.0107	0.4082 –0.0172	0.5122 –0.0151
0.4692 –0.0167	0.4387 –0.0151	0.5619 –0.0185	0.4132 –0.0147	0.5160 –0.0154
0.4735 –0.0176	0.4423 –0.0212	0.5663 –0.0065	0.4167 –0.0207	0.5198 –0.0280
0.4787 –0.0054	0.4459 –0.0244	0.5702 –0.0101	0.4217 –0.0214	0.5256 –0.0309
0.4859 –0.0190	0.4499 –0.0242	0.5740 –0.0162	0.4256 –0.0289	0.5298 –0.0268
0.4910 –0.0101	0.4540 –0.0204	0.5784 –0.0077	0.4296 –0.0257	0.5366 –0.0292
0.4953 –0.0158	0.4583 –0.0198	0.5819 –0.0058	0.4336 –0.0285	0.5422 –0.0236
0.4998 –0.0135	0.4625 –0.0144	0.5862 + 0.0002	0.4375 –0.0291	0.5466 –0.0266
0.5040 –0.0098	0.4669 –0.0141	0.5909 –0.0084	0.4413 –0.0267	0.5503 –0.0239
0.5117 –0.0076	0.4709 –0.0214	2447276 +	0.4457 –0.0252	0.5541 –0.0193
0.5165 + 0.0015	0.4744 –0.0235	0.3401 –0.0156	0.4491 –0.0271	0.5588 –0.0132
0.5211 + 0.0058	0.4816 –0.0084	0.3444 –0.0141	0.4530 –0.0254	
0.5266 –0.0033	0.4894 –0.0192	0.3488 –0.0172	0.4568 –0.0261	

The differential light curves of the primary and the secondary to the other comparison stars are edited into a single figure, in Figure 57. The different panels show the different

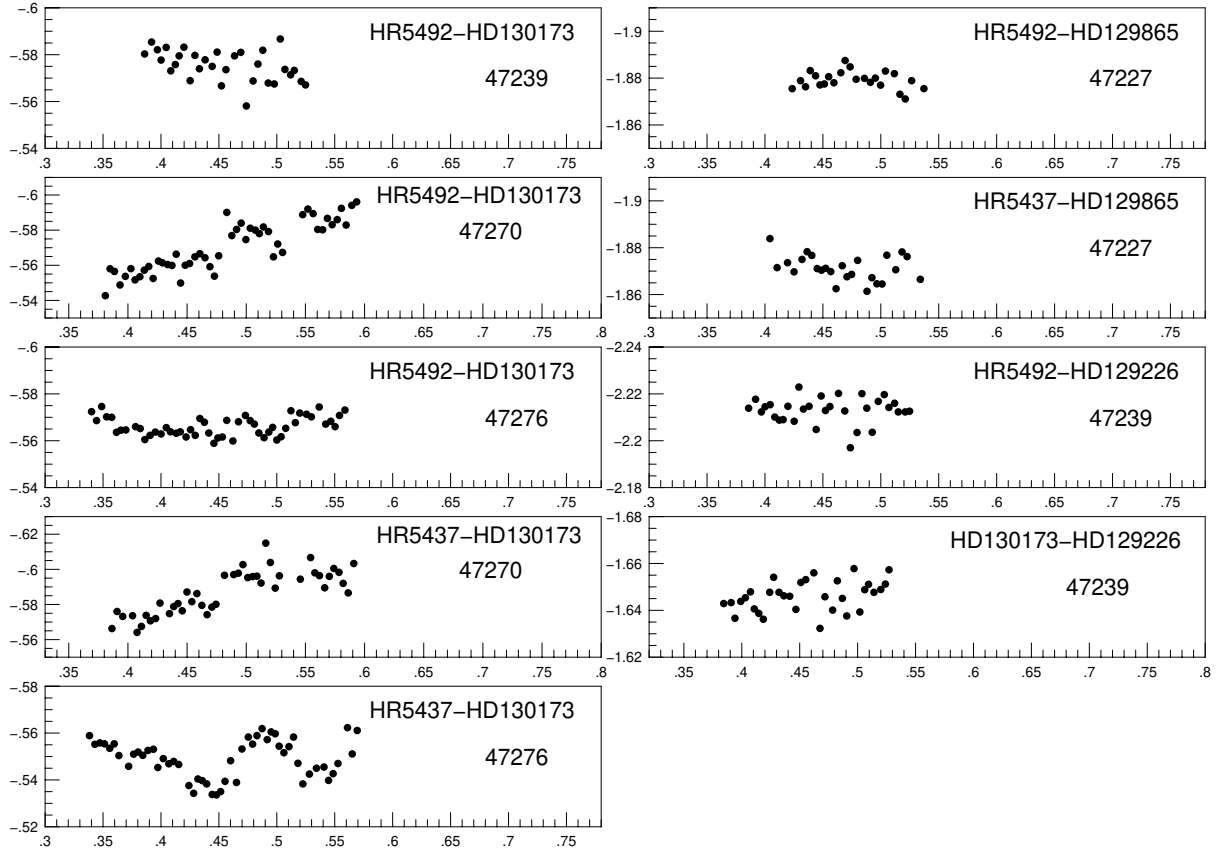


Figure 57: Light curves of HR 5492 and HR 5437 to different comparison stars. The actual stars are marked in the label on each panel.

behaviour of the stars observed in the DL Dra project. The first three panels on the left side shows that HR 5492 does not show remarkable light variation, however HD 130173 shows a long term light variation on the JD 47270, mostly in the second panel. The rest of the panels on the left side shows the variable HR 5437 to the HD 130173 comparison star. The long term variation of HD 130173 can be seen on the fourth panel similar to the second one, but here we can notice the light variation of HR 5437. The light variation of HR 5437 has definitely high amplitude on the JD 47276 nights. The light curves in the panels on the right side are not long enough to have definite conclusion, but we can see that neither HD 129865, nor HD 129226 show any light variation. The long term light variation of HD 130173 can be also noticed in the last panel on the right side.

The data of the light curves in the left side panels are given in Table 75 and Table 76.

Table 75. The data for the HR5492 – HD130173 differential light curve

HR 5492 – HD	0.3969 – 0.5821	0.4157 – 0.5795	0.4381 – 0.5778	0.4635 – 0.5795
130173	0.4001 – 0.5777	0.4198 – 0.5832	0.4442 – 0.5750	0.4689 – 0.5810
2447239 +	0.4045 – 0.5831	0.4252 – 0.5689	0.4485 – 0.5811	0.4737 – 0.5581
0.3859 – 0.5803	0.4085 – 0.5731	0.4293 – 0.5797	0.4522 – 0.5667	0.4795 – 0.5688
0.3919 – 0.5854	0.4124 – 0.5758	0.4332 – 0.5740	0.4561 – 0.5736	0.4837 – 0.5760

0.4879 −0.5819	0.4336 −0.5604	0.5266 −0.5721	0.3781 −0.5660	0.4770 −0.5686
0.4926 −0.5679	0.4372 −0.5599	0.5307 −0.5673	0.3821 −0.5652	0.4806 −0.5671
0.4978 −0.5675	0.4408 −0.5663	0.5477 −0.5888	0.3861 −0.5605	0.4845 −0.5633
0.5030 −0.5867	0.4445 −0.5499	0.5521 −0.5920	0.3906 −0.5623	0.4890 −0.5613
0.5070 −0.5737	0.4484 −0.5600	0.5565 −0.5894	0.3951 −0.5637	0.4931 −0.5637
0.5119 −0.5714	0.4521 −0.5610	0.5604 −0.5804	0.4001 −0.5629	0.4964 −0.5657
0.5151 −0.5733	0.4566 −0.5648	0.5646 −0.5802	0.4046 −0.5656	0.5000 −0.5603
0.5210 −0.5686	0.4608 −0.5666	0.5686 −0.5867	0.4082 −0.5638	0.5037 −0.5617
0.5248 −0.5671	0.4651 −0.5643	0.5726 −0.5831	0.4132 −0.5632	0.5077 −0.5653
2447270 +	0.4693 −0.5592	0.5769 −0.5860	0.4167 −0.5638	0.5122 −0.5728
0.3809 −0.5427	0.4731 −0.5538	0.5804 −0.5924	0.4217 −0.5616	0.5160 −0.5677
0.3849 −0.5580	0.4767 −0.5654	0.5844 −0.5829	0.4256 −0.5647	0.5198 −0.5718
0.3886 −0.5565	0.4836 −0.5901	0.5892 −0.5941	0.4296 −0.5623	0.5256 −0.5713
0.3933 −0.5488	0.4878 −0.5769	0.5933 −0.5961	0.4336 −0.5695	0.5298 −0.5702
0.3978 −0.5537	0.4918 −0.5804	2447276 +	0.4375 −0.5679	0.5366 −0.5744
0.4025 −0.5581	0.4957 −0.5840	0.3401 −0.5724	0.4413 −0.5633	0.5422 −0.5671
0.4060 −0.5517	0.4997 −0.5746	0.3444 −0.5686	0.4457 −0.5589	0.5466 −0.5683
0.4101 −0.5535	0.5034 −0.5811	0.3488 −0.5746	0.4491 −0.5612	0.5503 −0.5660
0.4138 −0.5572	0.5077 −0.5800	0.3531 −0.5702	0.4530 −0.5616	0.5541 −0.5708
0.4176 −0.5593	0.5111 −0.5780	0.3575 −0.5700	0.4568 −0.5687	0.5588 −0.5731
0.4213 −0.5525	0.5145 −0.5818	0.3616 −0.5636	0.4621 −0.5599	
0.4258 −0.5624	0.5188 −0.5792	0.3653 −0.5645	0.4669 −0.5681	
0.4292 −0.5614	0.5230 −0.5648	0.3697 −0.5646	0.4729 −0.5708	

Table 76. The data for the HR5437 – HD130173 differential light curve

HR 5437 – HD	0.4625 −0.5795	0.5663 −0.5895	0.3935 −0.5531	0.4829 −0.5589
130137	0.4669 −0.5742	0.5702 −0.5960	0.3973 −0.5453	0.4873 −0.5619
2447270 +	0.4709 −0.5785	0.5740 −0.6005	0.4020 −0.5491	0.4917 −0.5572
0.3865 −0.5663	0.4744 −0.5801	0.5784 −0.5983	0.4068 −0.5469	0.4951 −0.5605
0.3908 −0.5760	0.4816 −0.5966	0.5819 −0.5920	0.4110 −0.5479	0.4986 −0.5597
0.3956 −0.5732	0.4894 −0.5970	0.5862 −0.5866	0.4153 −0.5466	0.5020 −0.5544
0.4039 −0.5736	0.4933 −0.5978	0.5909 −0.6033	0.4241 −0.5376	0.5061 −0.5516
0.4077 −0.5641	0.4972 −0.6027	2447276 +	0.4282 −0.5343	0.5105 −0.5542
0.4114 −0.5675	0.5013 −0.5953	0.3383 −0.5589	0.4319 −0.5404	0.5144 −0.5583
0.4154 −0.5738	0.5054 −0.5959	0.3430 −0.5552	0.4357 −0.5397	0.5182 −0.5471
0.4190 −0.5707	0.5090 −0.5961	0.3473 −0.5558	0.4395 −0.5383	0.5225 −0.5383
0.4234 −0.5720	0.5125 −0.5922	0.3513 −0.5554	0.4442 −0.5338	0.5281 −0.5425
0.4271 −0.5808	0.5165 −0.6149	0.3558 −0.5535	0.4478 −0.5336	0.5342 −0.5450
0.4351 −0.5748	0.5204 −0.6039	0.3596 −0.5554	0.4515 −0.5350	0.5407 −0.5455
0.4387 −0.5788	0.5245 −0.5893	0.3637 −0.5504	0.4553 −0.5394	0.5447 −0.5398
0.4423 −0.5805	0.5280 −0.5963	0.3721 −0.5458	0.4601 −0.5482	0.5486 −0.5427
0.4459 −0.5764	0.5457 −0.5944	0.3764 −0.5510	0.4652 −0.5389	0.5528 −0.5470
0.4499 −0.5871	0.5544 −0.6067	0.3803 −0.5519	0.4699 −0.5532	0.5610 −0.5623
0.4540 −0.5816	0.5580 −0.5980	0.3843 −0.5505	0.4754 −0.5583	0.5651 −0.5511
0.4583 −0.5862	0.5619 −0.5964	0.3888 −0.5526	0.4791 −0.5553	0.5694 −0.5611

The data for the light curves in the panels on the right side are given for panel to panel in different tables, from Table 77, 78, 79 and 80.

Table 77. The data for the HR5492 – HD129865 differential light curve

HR 5492 – HD	0.4391 –1.8832	0.4655 –1.8823	0.4953 –1.8800	0.5266 –1.8789
129865	0.4437 –1.8810	0.4692 –1.8875	0.4998 –1.8770	0.5372 –1.8755
2447227 +	0.4475 –1.8771	0.4735 –1.8848	0.5040 –1.8830	
0.4235 –1.8755	0.4513 –1.8775	0.4787 –1.8795	0.5117 –1.8819	
0.4307 –1.8789	0.4550 –1.8806	0.4859 –1.8799	0.5165 –1.8731	
0.4350 –1.8763	0.4595 –1.8780	0.4910 –1.8782	0.5211 –1.8711	

Table 78. The data for the HR5437 – HD129865 differential light curve

HR 5437 – HD	0.4251 –1.8697	0.4524 –1.8712	0.4800 –1.8746	0.5129 –1.8706
129865	0.4320 –1.8750	0.4568 –1.8698	0.4881 –1.8614	0.5183 –1.8782
2447227 +	0.4364 –1.8783	0.4614 –1.8625	0.4923 –1.8672	0.5227 –1.8762
0.4043 –1.8839	0.4404 –1.8767	0.4667 –1.8723	0.4966 –1.8646	0.5341 –1.8665
0.4105 –1.8715	0.4451 –1.8711	0.4708 –1.8676	0.5011 –1.8645	
0.4195 –1.8736	0.4488 –1.8704	0.4748 –1.8686	0.5052 –1.8768	

Table 79. The data for the HR5492 – HD129226 differential light curve

HR 5492 – HD	0.4045 –2.2154	0.4332 –2.2135	0.4689 –2.2127	0.5030 –2.2197
129226	0.4085 –2.2101	0.4381 –2.2147	0.4737 –2.1970	0.5070 –2.2142
2447239 +	0.4124 –2.2088	0.4442 –2.2048	0.4795 –2.2035	0.5119 –2.2160
0.3859 –2.2139	0.4157 –2.2090	0.4485 –2.2191	0.4837 –2.2201	0.5151 –2.2123
0.3919 –2.2177	0.4198 –2.2147	0.4522 –2.2129	0.4879 –2.2139	0.5210 –2.2123
0.3969 –2.2123	0.4252 –2.2083	0.4561 –2.2146	0.4926 –2.2036	0.5248 –2.2126
0.4001 –2.2145	0.4293 –2.2229	0.4635 –2.2202	0.4978 –2.2168	

Table 80. The data for the HD130173 – HD129226 differential light curve

HD 130173 –	0.4031 –1.6454	0.4321 –1.6477	0.4675 –1.6323	0.5019 –1.6393
HD129226	0.4075 –1.6479	0.4363 –1.6462	0.4718 –1.6458	0.5061 –1.6488
2447239 +	0.4108 –1.6406	0.4414 –1.6460	0.4784 –1.6401	0.5094 –1.6511
0.3844 –1.6429	0.4147 –1.6387	0.4467 –1.6404	0.4825 –1.6526	0.5141 –1.6477
0.3908 –1.6433	0.4186 –1.6362	0.4510 –1.6519	0.4868 –1.6451	0.5200 –1.6489
0.3941 –1.6366	0.4241 –1.6477	0.4552 –1.6531	0.4906 –1.6376	0.5239 –1.6512
0.3991 –1.6438	0.4275 –1.6541	0.4622 –1.6560	0.4969 –1.6578	0.5271 –1.6573

Although the DL Dra project does not have a tremendous amount of observational data, but it confirmed that HR 5437 is a variable star. The data may fill in some gaps in the observations of other colleagues. If newly established space projects have data for HR 5437, the presently published data can extend the timespan. Any change in the light variation can be much better recognized on a longer timebase.

The archived files are divided according to the different stars. The files correspond to the tables: HR5492–HR5437.arch (Table 73), HR5437–HR5492.arch (Table 74),

HR5492–HD130173.arch (Table 75), HR5437–HD130173.arch (Table 76),
 HR5492–HD129865.arch (Table 77), HR5437–HD129865.arch (Table 78),
 HR5492–HD129226.arch (Table 79). HD130173–HD129226.arch (Table 80).

Observations in the Praesepe cluster

As we have shown in the previous sections, the research for variable stars in clusters were really widespread all over the world. The stars in the Praesepe cluster were systematically checked for variability for years and by many groups (M. Breger, Mexican group, even the STEPPI IV campaign). Later, when the members were proven to be variable, they were continuously investigated. We also had a project in Konkoly Observatory for the stars in the Praesepe cluster from 1985 to 1991, although the observations were rather sporadic. The aim of the observations were different, concerning KW 385, KW 445, KW 323 and KW 207. Partly KW 385 was checked for variability, after it was used as a comparison star. The other targets were part of a Hungarian and Mexican collaboration. We discuss these stars, separately.

KW 385 = HD 73890

An early investigation was done by Géza Kovács in Konkoly Observatoy and were published (Kovács, 1981). He investigated HD 73763 (= BN Cnc = KW 323). This star shows δ Scuti type light variation with a rather large amplitude. He used HD 73890 (= KW 385) as the only comparison star. According to a 7-hour observation of Breger (1970), the KW 385 did not turn out to be definitely variable, however, the residuals of KW 385 were systematic enough to suggest a possible regular variability with amplitudes less than 0.01 mag. Another check star, the KW 284 did not show any light variation. Although, the KW 385 was suggested to be a possible low-amplitude variable star, the early Konkoly observations used it as a single comparison star.

New photoelectric observations were carried out in 1990 to check the real situation. Part of the observation was done by Zoltán Kolláth. The journal of the observation is given in Table 81. Altogether longer than 2 days were observed. The last coloumn gives the mean error night by night for both KW 385 and KW 284. Even the much lower mean error for KW 284 proves that KW 284 is not a variable star. The paper on the result was published by Paparó & Kolláth (1990). The simple intensity curves of KW 385, KW 284, KW 323 and KW 445 give additional proof that KW 284 is definitely a constant star, even on the low-amplitude level (Figure 2 of that paper).

The differential light curves of KW 385 compared to KW 284 are given in Figure 58. The first four panels give the light variation on the four consecutive nights. There is no doubt on the variability of KW 385, especially on the night JD 2447898. On the other panels the amplitude of the light variation is not as large as on the best night and sometimes the quality of the sky is not as stable, but we concluded that KW 385 shows definite light variation. The period of the variation is typical for the low-amplitude δ Scuti stars. Any investigation of archived data where KW 385 was used as comparison star, is suggested to reinvestigate or treated carefully. The data, used for Figure 58, are

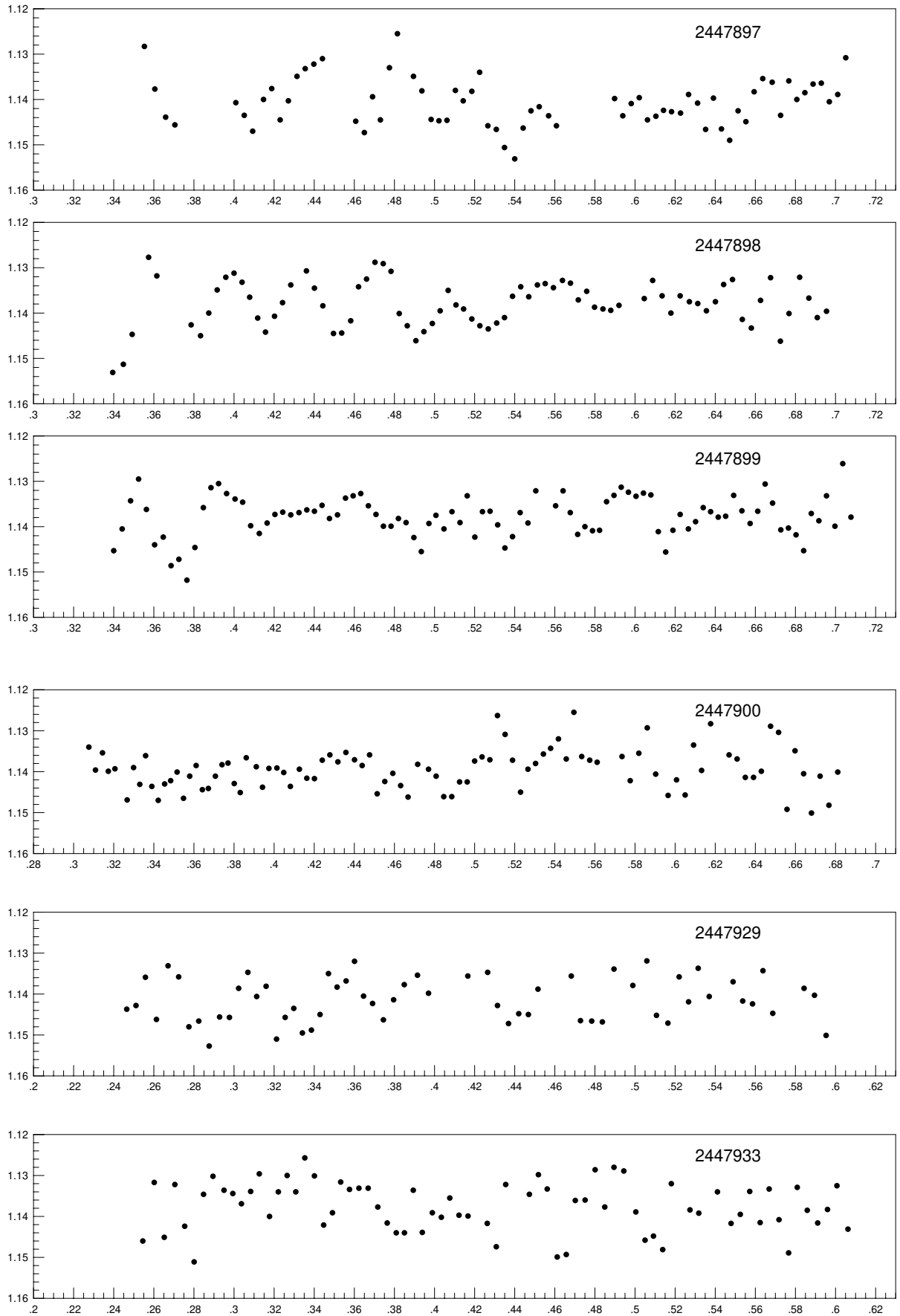
Table 81. Journal of the observation of KW 385.

Date (UT)	HJD 2400000+	Length (day)	Number	Mean absolute error (s) (mmag) KW 385 KW 284
Jan 5/6 1990	47897	0.3498	68	5.3 - 3.9
Jan 6/7 1990	47898	0.3560	78	3.4 - 2.6
Jan 7/8 1990	47899	0.3677	95	6.4 - 2.9
Jan 8/9 1990	47900	0.3735	96	10.6 - 3.1
Febr 6/7 1990	47929	0.3488	63	
Febr 10/11 1990	47933	0.3017	72	
Total		2.0975	472	

given in Table 82. Since these data were not previously published, we submit it in the archive.

Table 82. The differential data for KW 385 – KW 284 in V colour

KW 385 – KW	.5062 1.1446	.6472 1.1490	.4078 1.1365	.5268 1.1435
284	.5104 1.1380	.6514 1.1425	.4118 1.1411	.5310 1.1422
2447897 +	.5143 1.1403	.6553 1.1449	.4157 1.1442	.5349 1.1410
.3553 1.1283	.5186 1.1382	.6594 1.1383	.4202 1.1407	.5389 1.1363
.3605 1.1377	.5225 1.1340	.6637 1.1354	.4242 1.1377	.5430 1.1342
.3659 1.1439	.5266 1.1458	.6684 1.1362	.4283 1.1338	.5470 1.1364
.3705 1.1456	.5308 1.1466	.6726 1.1435	.4361 1.1307	.5513 1.1338
.4009 1.1407	.5349 1.1506	.6767 1.1359	.4401 1.1345	.5552 1.1335
.4051 1.1435	.5400 1.1531	.6807 1.1400	.4443 1.1384	.5593 1.1344
.4093 1.1470	.5442 1.1463	.6847 1.1385	.4496 1.1445	.5638 1.1328
.4147 1.1400	.5481 1.1425	.6888 1.1366	.4537 1.1444	.5678 1.1334
.4188 1.1376	.5522 1.1416	.6929 1.1364	.4582 1.1417	.5717 1.1371
.4230 1.1445	.5569 1.1436	.6969 1.1405	.4621 1.1342	.5759 1.1352
.4271 1.1403	.5608 1.1458	.7011 1.1389	.4661 1.1325	.5798 1.1387
.4314 1.1349	.5898 1.1398	.7051 1.1308	.4703 1.1288	.5840 1.1391
.4355 1.1332	.5939 1.1436	2447898 +	.4744 1.1291	.5879 1.1394
.4398 1.1322	.5981 1.1409	.3395 1.1531	.4783 1.1308	.5920 1.1383
.4441 1.1310	.6021 1.1396	.3448 1.1513	.4824 1.1401	.6046 1.1368
.4607 1.1448	.6062 1.1445	.3492 1.1447	.4864 1.1428	.6088 1.1328
.4650 1.1473	.6104 1.1437	.3574 1.1277	.4907 1.1461	.6135 1.1362
.4691 1.1394	.6142 1.1424	.3615 1.1318	.4947 1.1441	.6179 1.1400
.4730 1.1445	.6182 1.1427	.3786 1.1426	.4989 1.1423	.6225 1.1362
.4775 1.1330	.6227 1.1430	.3833 1.1450	.5028 1.1395	.6271 1.1375
.4815 1.1255	.6267 1.1389	.3874 1.1400	.5068 1.1350	.6313 1.1379
.4895 1.1349	.6312 1.1408	.3916 1.1349	.5107 1.1382	.6356 1.1395
.4937 1.1381	.6352 1.1466	.3959 1.1321	.5145 1.1391	.6401 1.1375
.4983 1.1444	.6391 1.1397	.4000 1.1312	.5186 1.1413	.6442 1.1337
.5022 1.1447	.6431 1.1465	.4040 1.1332	.5226 1.1428	.6486 1.1326

Figure 58: Differential light curves of KW 385 – KW 284 in *V* colour

.6535 1.1414	.4820 1.1382	.6649 1.1306	.4201 1.1417	.6177 1.1283
.6580 1.1433	.4858 1.1391	.6686 1.1348	.4240 1.1372	.6269 1.1359
.6626 1.1372	.4897 1.1424	.6727 1.1407	.4278 1.1359	.6309 1.1369
.6676 1.1322	.4934 1.1455	.6765 1.1403	.4318 1.1376	.6350 1.1414
.6725 1.1462	.4972 1.1393	.6803 1.1418	.4358 1.1353	.6391 1.1414
.6768 1.1401	.5007 1.1375	.6841 1.1453	.4401 1.1371	.6430 1.1399
.6821 1.1321	.5047 1.1405	.6879 1.1371	.4439 1.1385	.6476 1.1289
.6867 1.1367	.5087 1.1367	.6917 1.1387	.4476 1.1359	.6516 1.1304
.6909 1.1410	.5127 1.1391	.6955 1.1332	.4514 1.1454	.6558 1.1492
.6955 1.1396	.5163 1.1332	.6997 1.1399	.4552 1.1424	.6598 1.1349
2447899 +	.5201 1.1423	.7036 1.1261	.4592 1.1404	.6641 1.1405
.3400 1.1453	.5239 1.1367	.7077 1.1379	.4631 1.1434	.6680 1.1501
.3442 1.1405	.5277 1.1366	2447900 +	.4668 1.1462	.6723 1.1411
.3484 1.1343	.5315 1.1396	.3076 1.1340	.4716 1.1382	.6767 1.1482
.3524 1.1295	.5351 1.1447	.3109 1.1396	.4770 1.1394	.6811 1.1401
.3563 1.1362	.5389 1.1422	.3144 1.1354	.4808 1.1411	2447929 +
.3604 1.1440	.5427 1.1369	.3173 1.1399	.4846 1.1461	.2465 1.1437
.3647 1.1423	.5466 1.1392	.3206 1.1393	.4886 1.1461	.2511 1.1428
.3686 1.1486	.5505 1.1321	.3236 1.1001	.4925 1.1425	.2558 1.1359
.3725 1.1472	.5604 1.1354	.3267 1.1469	.4963 1.1425	.2613 1.1462
.3765 1.1518	.5641 1.1321	.3299 1.1390	.5000 1.1374	.2671 1.1331
.3805 1.1446	.5677 1.1369	.3330 1.1431	.5037 1.1364	.2724 1.1358
.3847 1.1358	.5714 1.1417	.3359 1.1361	.5076 1.1371	.2775 1.1480
.3885 1.1314	.5750 1.1400	.3390 1.1436	.5114 1.1263	.2824 1.1466
.3923 1.1305	.5788 1.1409	.3422 1.1470	.5152 1.1309	.2876 1.1527
.3963 1.1327	.5823 1.1408	.3454 1.1430	.5189 1.1372	.2928 1.1456
.4005 1.1339	.5858 1.1345	.3484 1.1422	.5229 1.1450	.2977 1.1457
.4043 1.1346	.5895 1.1331	.3516 1.1401	.5266 1.1394	.3023 1.1386
.4083 1.1398	.5931 1.1313	.3548 1.1465	.5304 1.1380	.3069 1.1347
.4126 1.1415	.5967 1.1324	.3579 1.1411	.5343 1.1357	.3113 1.1406
.4165 1.1392	.6005 1.1333	.3611 1.1385	.5379 1.1343	.3160 1.1381
.4204 1.1373	.6042 1.1326	.3642 1.1444	.5418 1.1320	.3212 1.1510
.4243 1.1368	.6079 1.1330	.3672 1.1441	.5457 1.1369	.3255 1.1457
.4283 1.1374	.6116 1.1411	.3707 1.1411	.5495 1.1255	.3298 1.1435
.4324 1.1369	.6153 1.1456	.3740 1.1383	.5534 1.1363	.3341 1.1495
.4363 1.1363	.6189 1.1408	.3770 1.1379	.5574 1.1372	.3386 1.1488
.4401 1.1366	.6225 1.1373	.3801 1.1429	.5611 1.1377	.3429 1.1450
.4439 1.1353	.6266 1.1405	.3831 1.1451	.5735 1.1363	.3471 1.1350
.4476 1.1382	.6302 1.1389	.3861 1.1366	.5776 1.1422	.3514 1.1383
.4516 1.1374	.6340 1.1358	.3911 1.1388	.5819 1.1355	.3559 1.1368
.4556 1.1337	.6377 1.1367	.3942 1.1438	.5861 1.1293	.3601 1.1320
.4594 1.1332	.6415 1.1379	.3974 1.1392	.5903 1.1406	.3646 1.1405
.4632 1.1327	.6452 1.1377	.4014 1.1391	.5965 1.1458	.3691 1.1423
.4670 1.1354	.6492 1.1331	.4048 1.1402	.6007 1.1420	.3745 1.1463
.4708 1.1373	.6533 1.1365	.4081 1.1436	.6050 1.1457	.3796 1.1414
.4745 1.1399	.6574 1.1393	.4126 1.1394	.6092 1.1335	.3849 1.1377
.4783 1.1399	.6612 1.1366	.4163 1.1416	.6132 1.1397	.3915 1.1354

.3970 1.1398	.5489 1.1370	.3126 1.1296	.4076 1.1355	.5181 1.1320
.4166 1.1356	.5537 1.1417	.3177 1.1400	.4122 1.1397	.5274 1.1384
.4265 1.1347	.5586 1.1424	.3221 1.1340	.4167 1.1399	.5318 1.1392
.4314 1.1428	.5638 1.1343	.3265 1.1300	.4263 1.1417	.5411 1.1340
.4369 1.1472	.5687 1.1447	.3308 1.1340	.4308 1.1474	.5479 1.1417
.4420 1.1448	.5843 1.1386	.3353 1.1257	.4355 1.1322	.5525 1.1395
.4468 1.1450	.5895 1.1403	.3401 1.1301	.4473 1.1346	.5572 1.1339
.4516 1.1388	.5953 1.1501	.3447 1.1421	.4518 1.1298	.5624 1.1415
.4682 1.1356	2447933 +	.3491 1.1391	.4562 1.1333	.5669 1.1333
.4728 1.1465	.2545 1.1460	.3532 1.1316	.4612 1.1499	.5718 1.1408
.4784 1.1466	.2602 1.1317	.3576 1.1334	.4657 1.1493	.5766 1.1489
.4837 1.1468	.2652 1.1451	.3623 1.1331	.4702 1.1361	.5809 1.1329
.4895 1.1339	.2705 1.1322	.3669 1.1331	.4751 1.1360	.5859 1.1385
.4989 1.1379	.2754 1.1424	.3717 1.1377	.4801 1.1286	.5911 1.1416
.5059 1.1319	.2801 1.1511	.3764 1.1416	.4849 1.1377	.5960 1.1383
.5107 1.1452	.2848 1.1346	.3809 1.1440	.4895 1.1280	.6007 1.1325
.5164 1.1471	.2895 1.1302	.3850 1.1440	.4944 1.1289	.6062 1.1431
.5220 1.1358	.2950 1.1336	.3894 1.1336	.5004 1.1389	
.5267 1.1419	.2994 1.1344	.3939 1.1439	.5050 1.1458	
.5315 1.1337	.3037 1.1369	.3989 1.1391	.5092 1.1448	
.5370 1.1406	.3083 1.1339	.4034 1.1402	.5138 1.1481	

The archived file for KW 385 is kw385–kw284.arch.

KW 445, KW 323 and KW 207

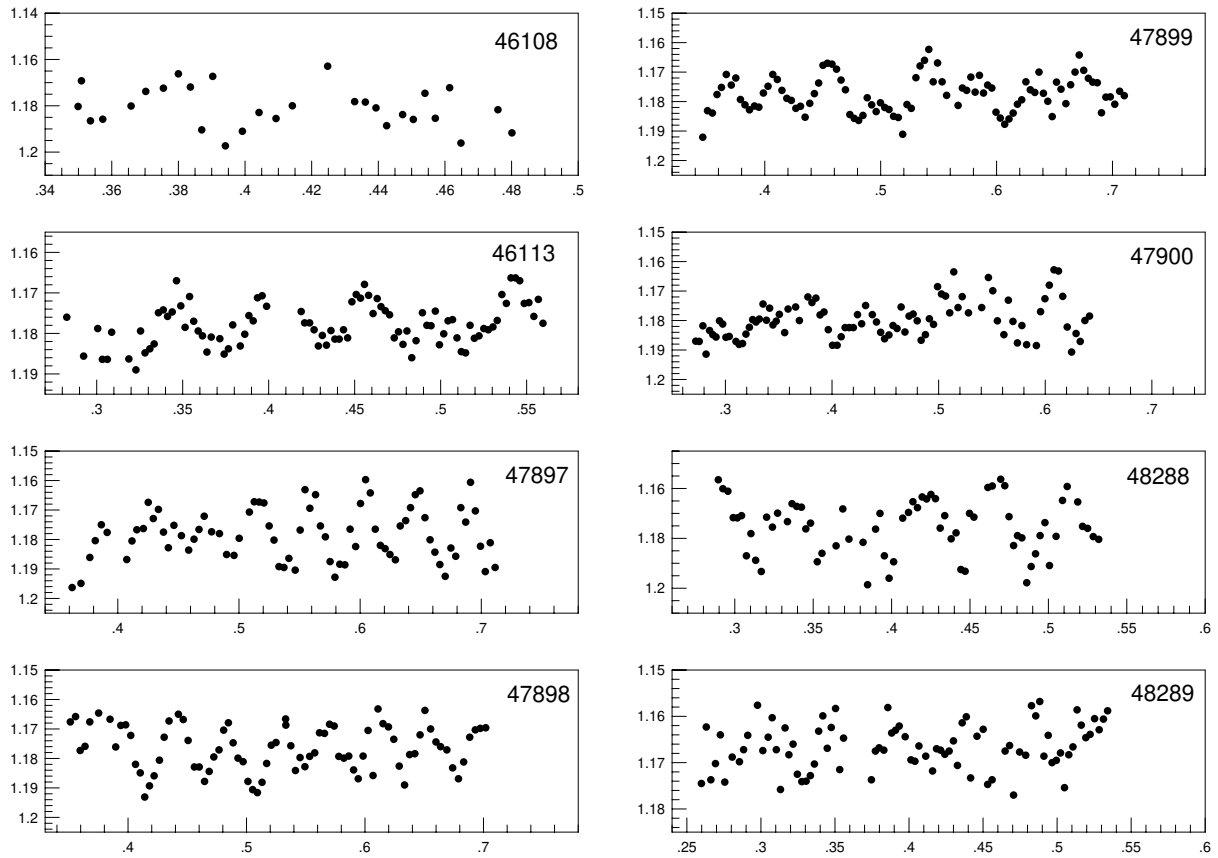
At the same time when KW 385 was observed, data on other variable members of the Praesepe open cluster, KW 445(=BX Cnc), KW 323(=BN Cnc) and KW 207(=BU Cnc), were also collected in 1990. Sporadic observations, only on some nights, were carried out in 1985, 1989 and 1991. The KW 284, KW 276 and KW 348 stars were used as a possible comparison star. The Hungarian data on the Praesepe stars has not been previously investigated and published, although observations in 1985 were part of a coordinated observation with Mexico, however, the Hungarian contribution was negligible. The campaign result was published in the paper of Peña et al. (1998). Here we present all the Hungarian observation for the astronomical community.

The journal of the observations for KW 445 is shown in Table 83. Only one comparison, KW 284, was used on each night in each observational season. None of any season's data was enough for independent analyses, however, we would not like to loose these observations. Table 83 contains the dates, HJD, the length of the observation both in days and hours and the number of measurements. Altogether more than 2 days, exactly 57.13 hours and 660 measurements were obtained in three seasons for KW 445. The observed data for KW 445 are corrected for light-time and are given in Table 84.

The light curves of KW 445 are shown in Fig 59. The scales show that the light amplitude is only around 0.04 magnitude and the periodicity is around 1.2 hours. The measurements are precise, some thousands of a magnitude, so the cycles of the variability are perfectly seen, especially on the nights of 2447897 and 2447898. The quality of the

Table 83. Journal of observations of KW 445 – KW 284 in Praesepe

Date (UT)	HJD 2400000+	Length day	Length hour	Number of obs.
Feb 11/12 1985	46108	0.1397	3.35	39
Feb 16/17 1985	46113	0.2784	6.68	97
Jan 5/6 1990	47897	0.3491	8.38	82
Jan 6/7 1990	47898	0.3506	8.41	82
Jan 7/8 1990	47899	0.3637	8.73	94
Jan 8/9 1990	47900	0.3736	8.97	97
Jan 31/Feb 1 1991	48288	0.2426	5.82	77
Feb 1/2 1991	48289	0.2829	6.79	92
All		2.3806	57.13	660

Figure 59: Light curves of KW 445 – KW 284 in *V* colour.

nights were excellent and many cycles were obtained.

Table 84. The differential data for KW 445 – KW 284 in *V* light

2446108 +	0.3536 1.1865	0.3509 1.1692	0.3702 1.1738	0.3800 1.1662
0.3499 1.1803	0.3573 1.1858	0.3658 1.1801	0.3755 1.1724	0.3836 1.1719

0.3870 1.1904	0.3641 1.1846	0.5043 1.1769	0.4959 1.1854	0.6951 1.1703
0.3903 1.1673	0.3666 1.1809	0.5069 1.1766	0.5002 1.1796	0.6993 1.1823
0.3941 1.1973	0.3716 1.1813	0.5095 1.1811	0.5086 1.1707	0.7033 1.1909
0.3992 1.1910	0.3741 1.1851	0.5120 1.1845	0.5126 1.1672	0.7074 1.1811
0.4042 1.1829	0.3766 1.1838	0.5145 1.1848	0.5167 1.1673	0.7114 1.1895
0.4093 1.1855	0.3791 1.1779	0.5171 1.1780	0.5206 1.1676	2447898 +
0.4142 1.1800	0.3835 1.1831	0.5196 1.1812	0.5249 1.1754	0.3513 1.1676
0.4215 1.1245	0.3861 1.1802	0.5223 1.1806	0.5289 1.1802	0.3557 1.1658
0.4248 1.1629	0.3885 1.1756	0.5251 1.1788	0.5330 1.1892	0.3596 1.1773
0.4283 1.2855	0.3910 1.1769	0.5277 1.1791	0.5371 1.1895	0.3637 1.1759
0.4329 1.1782	0.3935 1.1712	0.5304 1.1784	0.5412 1.1864	0.3677 1.1676
0.4361 1.1784	0.3962 1.1707	0.5329 1.1768	0.5464 1.1904	0.3752 1.1646
0.4393 1.1809	0.3988 1.1733	0.5356 1.1704	0.5505 1.1768	0.3848 1.1667
0.4425 1.1886	0.4189 1.1746	0.5382 1.1726	0.5545 1.1631	0.3896 1.1761
0.4473 1.1838	0.4209 1.1774	0.5409 1.1663	0.5585 1.1694	0.3939 1.1688
0.4505 1.1859	0.4238 1.1774	0.5435 1.1663	0.5632 1.1648	0.3980 1.1686
0.4540 1.1746	0.4264 1.1791	0.5460 1.1670	0.5672 1.1754	0.4023 1.1722
0.4571 1.1854	0.4289 1.1831	0.5486 1.1726	0.5713 1.1791	0.4063 1.1820
0.4614 1.1722	0.4312 1.1805	0.5513 1.1724	0.5752 1.1875	0.4103 1.1849
0.4648 1.1961	0.4336 1.1829	0.5542 1.1758	0.5792 1.1928	0.4141 1.1931
0.4701 1.2903	0.4362 1.1793	0.5568 1.1716	0.5832 1.1884	0.4181 1.1893
0.4759 1.1817	0.4385 1.1814	0.5595 1.1775	0.5874 1.1886	0.4220 1.1859
0.4801 1.1917	0.4410 1.1814	2447897 +	0.5917 1.1765	0.4265 1.1806
2446113 +	0.4435 1.1791	0.3623 1.1963	0.5963 1.1824	0.4305 1.1728
0.2826 1.1760	0.4459 1.1811	0.3696 1.1949	0.6003 1.1678	0.4346 1.1673
0.2924 1.1856	0.4484 1.1722	0.3769 1.1861	0.6045 1.1597	0.4425 1.1650
0.3006 1.1788	0.4509 1.1704	0.3814 1.1804	0.6084 1.1642	0.4466 1.1668
0.3033 1.1864	0.4534 1.1713	0.3864 1.1750	0.6125 1.1765	0.4507 1.1739
0.3062 1.1864	0.4557 1.1679	0.3912 1.1776	0.6167 1.1820	0.4560 1.1829
0.3087 1.1797	0.4581 1.1706	0.4074 1.1868	0.6206 1.1831	0.4601 1.1829
0.3187 1.1863	0.4607 1.1751	0.4117 1.1805	0.6246 1.1851	0.4646 1.1878
0.3228 1.1890	0.4631 1.1714	0.4157 1.1767	0.6291 1.1869	0.4685 1.1844
0.3255 1.1794	0.4653 1.1734	0.4211 1.1763	0.6331 1.1754	0.4724 1.1795
0.3281 1.1848	0.4678 1.1744	0.4251 1.1674	0.6376 1.1736	0.4768 1.1771
0.3309 1.1838	0.4703 1.1754	0.4293 1.1729	0.6416 1.1692	0.4807 1.1704
0.3334 1.1826	0.4730 1.1811	0.4335 1.1698	0.6455 1.1648	0.4847 1.1679
0.3359 1.1749	0.4755 1.1796	0.4377 1.1775	0.6494 1.1635	0.4887 1.1747
0.3387 1.1742	0.4781 1.1827	0.4417 1.1828	0.6535 1.1726	0.4928 1.1799
0.3412 1.1758	0.4804 1.1794	0.4463 1.1752	0.6577 1.1801	0.4971 1.1811
0.3439 1.1747	0.4832 1.1860	0.4525 1.1787	0.6617 1.1843	0.5012 1.1878
0.3464 1.1670	0.4857 1.1818	0.4585 1.1836	0.6658 1.1885	0.5052 1.1906
0.3489 1.1732	0.4894 1.1749	0.4629 1.1799	0.6702 1.1925	0.5092 1.1916
0.3514 1.1785	0.4920 1.1780	0.4670 1.1766	0.6749 1.1829	0.5131 1.1881
0.3540 1.1709	0.4944 1.1781	0.4713 1.1721	0.6789 1.1857	0.5170 1.1817
0.3564 1.1770	0.4969 1.1745	0.4774 1.1774	0.6831 1.1692	0.5209 1.1755
0.3590 1.1794	0.4993 1.1828	0.4839 1.1780	0.6871 1.1741	0.5249 1.1746
0.3615 1.1806	0.5018 1.1801	0.4898 1.1851	0.6911 1.1606	0.5330 1.1666

0.5332 1.1687	0.3711 1.1744	0.5530 1.1733	0.2882 1.1848	0.4684 1.1839
0.5374 1.1757	0.3750 1.1720	0.5569 1.1779	0.2912 1.1856	0.4723 1.1785
0.5413 1.1841	0.3790 1.1793	0.5668 1.1813	0.2945 1.1801	0.4761 1.1778
0.5452 1.1797	0.3829 1.1811	0.5705 1.1754	0.2975 1.1812	0.4799 1.1801
0.5493 1.1828	0.3868 1.1828	0.5742 1.1762	0.3005 1.1857	0.4836 1.1867
0.5533 1.1793	0.3911 1.1815	0.5778 1.1717	0.3036 1.1854	0.4876 1.1848
0.5576 1.1781	0.3949 1.1819	0.5815 1.1768	0.3099 1.1871	0.4913 1.1794
0.5616 1.1713	0.3988 1.1771	0.5852 1.1711	0.3129 1.1881	0.4952 1.1813
0.5658 1.1715	0.4028 1.1748	0.5887 1.1771	0.3161 1.1878	0.4990 1.1685
0.5701 1.1684	0.4069 1.1708	0.5923 1.1744	0.3193 1.1846	0.5027 1.1710
0.5740 1.1690	0.4108 1.1725	0.5959 1.1754	0.3225 1.1823	0.5065 1.1717
0.5779 1.1793	0.4148 1.1762	0.5995 1.1836	0.3256 1.1797	0.5104 1.1774
0.5822 1.1799	0.4190 1.1789	0.6032 1.1856	0.3287 1.1805	0.5142 1.1635
0.5863 1.1792	0.4229 1.1796	0.6070 1.1877	0.3318 1.1795	0.5182 1.1756
0.5904 1.1839	0.4268 1.1823	0.6107 1.1859	0.3353 1.1744	0.5221 1.1719
0.5943 1.1869	0.4308 1.1816	0.6143 1.1839	0.3385 1.1799	0.5280 1.1774
0.5984 1.1792	0.4348 1.1853	0.6180 1.1809	0.3415 1.1758	0.5404 1.1756
0.6026 1.1705	0.4388 1.1806	0.6217 1.1794	0.3446 1.1815	0.5467 1.1654
0.6068 1.1858	0.4428 1.1773	0.6253 1.1733	0.3477 1.1802	0.5508 1.1699
0.6110 1.1632	0.4465 1.1737	0.6291 1.1760	0.3506 1.1779	0.5551 1.1801
0.6152 1.1682	0.4502 1.1677	0.6330 1.1769	0.3556 1.1841	0.5612 1.1848
0.6198 1.1693	0.4540 1.1670	0.6366 1.1700	0.3588 1.1761	0.5654 1.1731
0.6243 1.1735	0.4580 1.1673	0.6404 1.1772	0.3659 1.1754	0.5697 1.1803
0.6289 1.1826	0.4619 1.1690	0.6442 1.1799	0.3694 1.1800	0.5739 1.1876
0.6334 1.1890	0.4658 1.1727	0.6480 1.1851	0.3774 1.1720	0.5781 1.1817
0.6377 1.1787	0.4696 1.1760	0.6517 1.1734	0.3812 1.1739	0.5825 1.1882
0.6421 1.1784	0.4734 1.1844	0.6556 1.1758	0.3849 1.1724	0.5917 1.1885
0.6465 1.1720	0.4772 1.1857	0.6598 1.1807	0.3888 1.1781	0.5956 1.1770
0.6506 1.1637	0.4810 1.1864	0.6639 1.1743	0.3925 1.1771	0.5997 1.1726
0.6554 1.1700	0.4847 1.1847	0.6677 1.1700	0.3965 1.1831	0.6038 1.1680
0.6599 1.1744	0.4884 1.1787	0.6713 1.1642	0.4005 1.1884	0.6082 1.1628
0.6638 1.1760	0.4922 1.1811	0.6752 1.1694	0.4048 1.1884	0.6124 1.1632
0.6691 1.1771	0.4961 1.1834	0.6792 1.1721	0.4086 1.1855	0.6164 1.1718
0.6740 1.1832	0.4998 1.1804	0.6829 1.1734	0.4123 1.1824	0.6206 1.1822
0.6789 1.1869	0.5035 1.1820	0.6869 1.1736	0.4161 1.1824	0.6247 1.1907
0.6833 1.1812	0.5072 1.1827	0.6905 1.1838	0.4200 1.1824	0.6289 1.1844
0.6884 1.1728	0.5111 1.1850	0.6943 1.1785	0.4239 1.1780	0.6328 1.1871
0.6931 1.1703	0.5152 1.1854	0.6981 1.1784	0.4278 1.1811	0.6372 1.1800
0.6973 1.1698	0.5190 1.1911	0.7020 1.1809	0.4315 1.1749	0.6415 1.1785
0.7019 1.1696	0.5227 1.1810	0.7062 1.1765	0.4378 1.1780	2448288 +
2447899 +	0.5264 1.1823	0.7102 1.1780	0.4417 1.1805	0.2895 1.1565
0.3465 1.1921	0.5304 1.1719	2447900 +	0.4456 1.1840	0.2924 1.1601
0.3506 1.1831	0.5340 1.1679	0.2722 1.1870	0.4493 1.1862	0.2956 1.1611
0.3548 1.1839	0.5378 1.1660	0.2755 1.1871	0.4534 1.1849	0.2990 1.1717
0.3588 1.1776	0.5415 1.1623	0.2789 1.1818	0.4572 1.1817	0.3016 1.1718
0.3626 1.1752	0.5453 1.1733	0.2819 1.1914	0.4610 1.1827	0.3043 1.1709
0.3668 1.1708	0.5491 1.1669	0.2852 1.1834	0.4648 1.1754	0.3074 1.1870

0.3103 1.1781	0.4223 1.1642	0.5250 1.1760	0.3448 1.1669	0.4531 1.1747
0.3133 1.1888	0.4251 1.1624	0.5286 1.1793	0.3475 1.1624	0.4561 1.1737
0.3169 1.1933	0.4280 1.1641	0.5321 1.1804	0.3504 1.1583	0.4649 1.1675
0.3203 1.1715	0.4310 1.1759	2448289 +	0.3532 1.1715	0.4679 1.1663
0.3240 1.1755	0.4339 1.1709	0.2598 1.1745	0.3558 1.1647	0.4706 1.1770
0.3273 1.1699	0.4380 1.1802	0.2631 1.1623	0.3746 1.1737	0.4747 1.1677
0.3336 1.1733	0.4411 1.1778	0.2662 1.1737	0.3773 1.1675	0.4788 1.1684
0.3365 1.1661	0.4442 1.1925	0.2693 1.1702	0.3798 1.1668	0.4827 1.1577
0.3395 1.1672	0.4469 1.1932	0.2726 1.1640	0.3830 1.1673	0.4856 1.1599
0.3425 1.1675	0.4497 1.1700	0.2756 1.1742	0.3857 1.1581	0.4883 1.1568
0.3453 1.1762	0.4525 1.1715	0.2806 1.1688	0.3883 1.1636	0.4911 1.1686
0.3483 1.1739	0.4614 1.1596	0.2855 1.1698	0.3909 1.1630	0.4940 1.1641
0.3526 1.1894	0.4642 1.1590	0.2883 1.1672	0.3934 1.1621	0.4966 1.1700
0.3556 1.1860	0.4696 1.1563	0.2911 1.1641	0.3974 1.1644	0.4995 1.1695
0.3646 1.1830	0.4722 1.1589	0.2977 1.1576	0.4013 1.1694	0.5023 1.1679
0.3689 1.1682	0.4749 1.1713	0.3013 1.1674	0.4040 1.1697	0.5050 1.1754
0.3728 1.1803	0.4778 1.1829	0.3049 1.1645	0.4067 1.1664	0.5079 1.1683
0.3818 1.1816	0.4803 1.1789	0.3076 1.1603	0.4113 1.1686	0.5107 1.1666
0.3847 1.1986	0.4831 1.1798	0.3104 1.1672	0.4159 1.1718	0.5135 1.1586
0.3898 1.1763	0.4862 1.1978	0.3132 1.1758	0.4186 1.1670	0.5163 1.1619
0.3926 1.1700	0.4890 1.1913	0.3163 1.1625	0.4213 1.1673	0.5194 1.1646
0.3954 1.1870	0.4918 1.1862	0.3189 1.1683	0.4242 1.1682	0.5223 1.1639
0.3984 1.1960	0.4947 1.1789	0.3217 1.1660	0.4271 1.1675	0.5253 1.1605
0.4013 1.1894	0.4978 1.1737	0.3246 1.1725	0.4300 1.1653	0.5284 1.1629
0.4044 1.2127	0.5007 1.1909	0.3276 1.1741	0.4327 1.1706	0.5313 1.1606
0.4071 1.1719	0.5049 1.1792	0.3305 1.1740	0.4359 1.1614	0.5341 1.1588
0.4108 1.1696	0.5090 1.1648	0.3334 1.1728	0.4387 1.1601	
0.4136 1.1653	0.5120 1.1592	0.3361 1.1703	0.4416 1.1733	
0.4165 1.1677	0.5187 1.1654	0.3390 1.1632	0.4459 1.1643	
0.4195 1.1634	0.5218 1.1752	0.3418 1.1599	0.4501 1.1628	

For KW 323 star the situation is different. On those nights where KW 445 was observed, in 1985 and 1990, KW 284 also was used as a comparison star. KW 323 was also observed in 1989, where a different comparison star, KW 276, was used on 2447568 and 2447569 nights. These nights were reduced for KW 276. The journal of KW 323 observation is given in Table 85. The structure of the table is the same as for KW 445. The columns are date, HJD, lenght in day, length in hour and the number of the measurements. An additional column gives the comparison star which was used for getting the differential light curves on the actual night. In the last line the total length and numbers are given. The total length of the observation is 2.745 day/65.87 hours and 746 measurements.

The light curves of KW 323 are shown in Fig 60. The quality of the light curves are seemingly less precise than for KW 445. However, the scales show that the amplitude of the light variation here is even lower than for KW 445, only around 0.02-0.03 magnitude. The light curve on the night 47898 definitely shows that the periodicity was shorter than for KW 445. The KW 323 shows cycles with period shorter than 1 hour. The data for

Table 85. Journal of observations of KW 323 in Praesepe

Date (UT)	HJD 2400000+	Length day	Lenght hour	Number of obs.	Comp.
Feb 11/12 1985	46108	0.1397	3.35	39	KW 284
Feb 16/17 1985	46113	0.2788	6.69	97	KW 284
Feb 10/11 1989	47568	0.2135	5.12	53	KW 276
Feb 11/12 1989	47569	0.1551	3.72	36	KW 276
Jan 5/6 1990	47897	0.3505	8.41	81	KW 284
Jan 6/7 1990	47898	0.3507	8.42	82	KW 284
Jan 7/8 1990	47899	0.3720	8.93	96	KW 284
Jan 8/9 1990	47900	0.3591	8.62	93	KW 284
Jan 31/Feb 1 1991	48288	0.2425	5.82	77	KW 284
Feb 1/2 1991	48289	0.2831	6.79	92	KW 284
All		2.745	65.87	746	

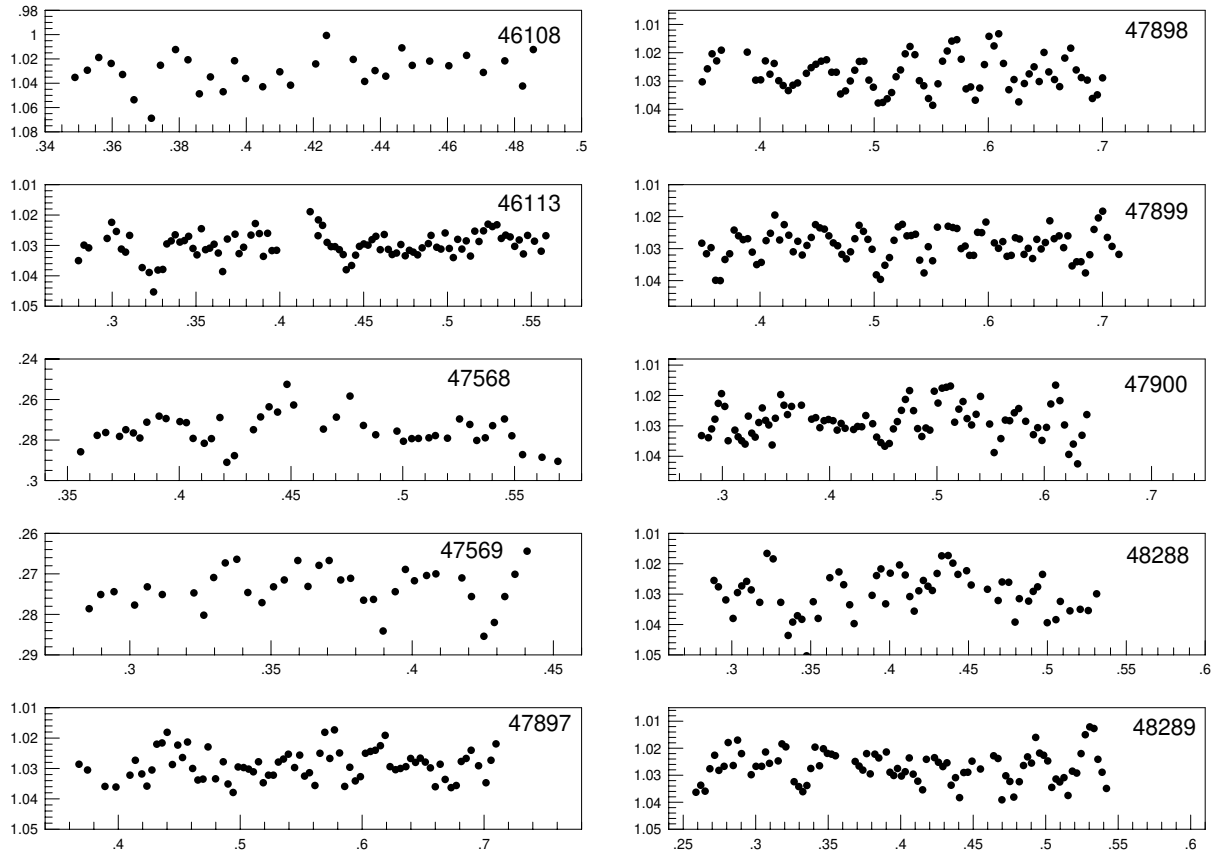


Figure 60: Light curves of KW 323 – KW 284 in V colour.

KW 323 are corrected for light-time effect and are listed in Table 86.

Table 86. The differential data for KW 323 – KW 284 or KW 276 in V light

2446108 +	0.3104 1.0267	0.4526 1.0299	0.3671 0.2763	0.2855 0.2786
0.3489 1.0352	0.3179 1.0373	0.4550 1.0281	0.3733 0.2782	0.2896 0.2751
0.3526 1.0293	0.3221 1.0389	0.4573 1.0270	0.3761 0.2749	0.2943 0.2744
0.3560 1.0188	0.3247 1.0453	0.4599 1.0314	0.3795 0.2765	0.3016 0.2777
0.3597 1.0237	0.3273 1.0381	0.4623 1.0264	0.3824 0.2790	0.3061 0.2732
0.3631 1.0328	0.3302 1.0379	0.4647 1.0313	0.3855 0.2712	0.3114 0.2751
0.3665 1.0536	0.3326 1.0295	0.4670 1.0330	0.3910 0.2682	0.3226 0.2747
0.3717 1.0688	0.3352 1.0285	0.4696 1.0325	0.3941 0.2694	0.3261 0.2802
0.3744 1.0252	0.3376 1.0265	0.4722 1.0297	0.4003 0.2709	0.3296 0.2709
0.3789 1.0123	0.3404 1.0289	0.4748 1.0334	0.4032 0.2714	0.3337 0.2673
0.3826 1.0207	0.3431 1.0284	0.4773 1.0316	0.4062 0.2792	0.3378 0.2664
0.3860 1.0487	0.3456 1.0270	0.4796 1.0322	0.4112 0.2816	0.3417 0.2746
0.3893 1.0348	0.3482 1.0310	0.4822 1.0331	0.4144 0.2793	0.3467 0.2771
0.3931 1.0470	0.3506 1.0331	0.4849 1.0308	0.4182 0.2689	0.3508 0.2732
0.3965 1.0215	0.3532 1.0245	0.4886 1.0294	0.4213 0.2910	0.3546 0.2715
0.3998 1.0361	0.3557 1.0314	0.4902 1.0267	0.4247 0.2877	0.3594 0.2667
0.4049 1.0429	0.3582 1.0309	0.4936 1.0306	0.4332 0.2749	0.3630 0.2731
0.4100 1.0306	0.3608 1.0296	0.4961 1.0312	0.4364 0.2686	0.3669 0.2679
0.4132 1.0416	0.3633 1.0325	0.4986 1.0259	0.4402 0.2636	0.3705 0.2667
0.4207 1.0241	0.3659 1.0386	0.5011 1.0310	0.4440 0.2662	0.3746 0.2715
0.4239 1.0007	0.3687 1.0279	0.5035 1.0340	0.4482 0.2525	0.3781 0.2711
0.4272 1.1152	0.3733 1.0263	0.5061 1.0280	0.4512 0.2627	0.3827 0.2765
0.4319 1.0204	0.3757 1.0327	0.5086 1.0312	0.4645 0.2746	0.3862 0.2763
0.4353 1.0385	0.3784 1.0306	0.5112 1.0285	0.4703 0.2687	0.3896 0.2841
0.4384 1.0296	0.3828 1.0266	0.5137 1.0335	0.4764 0.2583	0.3939 0.2744
0.4416 1.0342	0.3854 1.0228	0.5163 1.0253	0.4824 0.2728	0.3975 0.2689
0.4464 1.0109	0.3878 1.0261	0.5188 1.0287	0.4879 0.2774	0.4007 0.2717
0.4495 1.0253	0.3902 1.0336	0.5215 1.0252	0.4974 0.2756	0.4050 0.2704
0.4547 1.0218	0.3927 1.0260	0.5242 1.0230	0.5003 0.2806	0.4083 0.2700
0.4604 1.0256	0.3953 1.0317	0.5268 1.0238	0.5040 0.2793	0.4175 0.2710
0.4657 1.0171	0.3981 1.0316	0.5295 1.0232	0.5070 0.2792	0.4209 0.2756
0.4707 1.0311	0.4181 1.0189	0.5321 1.0277	0.5117 0.2789	0.4253 0.2854
0.4771 1.0216	0.4228 1.0268	0.5347 1.0266	0.5146 0.2778	0.4290 0.2820
0.4791 1.0836	0.4230 1.0216	0.5374 1.0272	0.5200 0.2791	0.4327 0.2756
0.4824 1.0423	0.4255 1.0234	0.5401 1.0303	0.5254 0.2696	0.4363 0.2701
0.4856 1.0123	0.4282 1.0290	0.5428 1.0282	0.5300 0.2723	0.4406 0.2644
2446113 +	0.4306 1.0304	0.5453 1.0328	0.5331 0.2802	244897 +
0.2799 1.0350	0.4329 1.0304	0.5478 1.0267	0.5369 0.2789	0.3678 1.0286
0.2832 1.0299	0.4355 1.0314	0.5519 1.0286	0.5402 0.2729	0.3748 1.0305
0.2860 1.0308	0.4378 1.0330	0.5559 1.0319	0.5455 0.2696	0.3795 1.0519
0.2970 1.0277	0.4396 1.0380	0.5587 1.0268	0.5488 0.2779	0.3845 1.0620
0.2997 1.0224	0.4428 1.0366	2447568 +	0.5536 0.2872	0.3891 1.0359
0.3025 1.0254	0.4452 1.0332	0.3559 0.2858	0.5623 0.2885	0.3981 1.0361
0.3055 1.0312	0.4475 1.0303	0.3602 0.3058	0.5694 0.2905	0.4096 1.0322
0.3080 1.0322	0.4501 1.0295	0.3633 0.2777	2447569 +	0.4140 1.0273

0.4193 1.0318	0.6189 1.0191	0.4749 1.0335	0.6722 1.0184	0.5019 1.0382
0.4235 1.0358	0.6229 1.0294	0.4791 1.0300	0.6770 1.0261	0.5055 1.0396
0.4276 1.0305	0.6274 1.0304	0.4830 1.0262	0.6815 1.0288	0.5094 1.0352
0.4316 1.0220	0.6314 1.0300	0.4870 1.0231	0.6867 1.0297	0.5134 1.0328
0.4359 1.0216	0.6359 1.0294	0.4910 1.0230	0.6912 1.0362	0.5174 1.0274
0.4401 1.0181	0.6398 1.0267	0.4954 1.0297	0.6955 1.0349	0.5211 1.0232
0.4444 1.0287	0.6438 1.0280	0.4993 1.0322	0.7001 1.0289	0.5247 1.0224
0.4488 1.0223	0.6477 1.0266	0.5035 1.0378	2447899 +	0.5287 1.0260
0.4527 1.0264	0.6518 1.0279	0.5075 1.0376	0.3490 1.0283	0.5325 1.0259
0.4568 1.0213	0.6560 1.0298	0.5114 1.0363	0.3531 1.0316	0.5362 1.0255
0.4610 1.0300	0.6600 1.0360	0.5153 1.0341	0.3571 1.0297	0.5399 1.0336
0.4653 1.0338	0.6640 1.0286	0.5192 1.0285	0.3611 1.0399	0.5437 1.0376
0.4695 1.0335	0.6681 1.0336	0.5231 1.0261	0.3652 1.0400	0.5474 1.0294
0.4736 1.0229	0.6730 1.0363	0.5272 1.0204	0.3693 1.0334	0.5512 1.0338
0.4798 1.0334	0.6772 1.0356	0.5314 1.0178	0.3734 1.0316	0.5554 1.0233
0.4861 1.0278	0.6813 1.0277	0.5357 1.0207	0.3773 1.0242	0.5648 1.0230
0.4900 1.0351	0.6853 1.0267	0.5396 1.0299	0.3812 1.0260	0.5689 1.0234
0.4942 1.0379	0.6894 1.0240	0.5435 1.0317	0.3852 1.0272	0.5725 1.0237
0.4983 1.0295	0.6955 1.0291	0.5476 1.0362	0.3892 1.0269	0.5762 1.0300
0.5028 1.0297	0.7016 1.0347	0.5513 1.0386	0.3932 1.0311	0.5797 1.0292
0.5069 1.0302	0.7057 1.0273	0.5559 1.0310	0.3971 1.0350	0.5836 1.0321
0.5108 1.0311	0.7098 1.0219	0.5599 1.0230	0.4011 1.0343	0.5871 1.0321
0.5150 1.0278	2447898 +	0.5640 1.0194	0.4053 1.0275	0.5906 1.0249
0.5189 1.0347	0.3494 1.0303	0.5680 1.0159	0.4091 1.0252	0.5942 1.0250
0.5232 1.0322	0.3539 1.0257	0.5724 1.0154	0.4130 1.0195	0.5979 1.0217
0.5272 1.0322	0.3580 1.0204	0.5763 1.0223	0.4172 1.0273	0.6015 1.1285
0.5313 1.0279	0.3620 1.0229	0.5805 1.0328	0.4212 1.0225	0.6053 1.0282
0.5355 1.0269	0.3661 1.0191	0.5845 1.0321	0.4252 1.0258	0.6089 1.0299
0.5395 1.0253	0.3888 1.0198	0.5886 1.0368	0.4291 1.0310	0.6127 1.0278
0.5446 1.0297	0.3962 1.0297	0.5925 1.0325	0.4331 1.0277	0.6164 1.0324
0.5488 1.0256	0.4006 1.0296	0.5966 1.0242	0.4370 1.0320	0.6201 1.0321
0.5528 1.0325	0.4047 1.0229	0.6006 1.0142	0.4411 1.0290	0.6237 1.0266
0.5568 1.0314	0.4087 1.0276	0.6050 1.0176	0.4449 1.0265	0.6273 1.0270
0.5613 1.0356	0.4124 1.0238	0.6091 1.0133	0.4486 1.0225	0.6313 1.0318
0.5654 1.0250	0.4164 1.0299	0.6133 1.0238	0.4524 1.0235	0.6350 1.0299
0.5694 1.0181	0.4203 1.0316	0.6180 1.0331	0.4564 1.0239	0.6388 1.0331
0.5735 1.0267	0.4248 1.0334	0.6225 1.0295	0.4603 1.0260	0.6425 1.0271
0.5773 1.0173	0.4288 1.0315	0.6267 1.0374	0.4642 1.0282	0.6463 1.0301
0.5815 1.0249	0.4329 1.0307	0.6316 1.0309	0.4680 1.0291	0.6500 1.0281
0.5857 1.0359	0.4406 1.0273	0.6358 1.0275	0.4717 1.0318	0.6539 1.0213
0.5899 1.0296	0.4448 1.0253	0.6401 1.0250	0.4756 1.0332	0.6577 1.0269
0.5944 1.0341	0.4489 1.0241	0.6446 1.0302	0.4793 1.0310	0.6620 1.0260
0.5986 1.0327	0.4536 1.0230	0.6488 1.0199	0.4831 1.0269	0.6660 1.0297
0.6027 1.0250	0.4583 1.0225	0.6530 1.0268	0.4868 1.0227	0.6697 1.0260
0.6068 1.0244	0.4628 1.0269	0.6580 1.0295	0.4906 1.0246	0.6734 1.0354
0.6108 1.0240	0.4668 1.0269	0.6625 1.0320	0.4945 1.0271	0.6774 1.0341
0.6150 1.0225	0.4706 1.0346	0.6670 1.0219	0.4982 1.0302	0.6812 1.0341

0.6851 1.0376	0.4337 1.0266	0.6352 1.0331	0.4401 1.0198	0.3440 1.0265
0.6889 1.0319	0.4401 1.0293	0.6397 1.0263	0.4433 1.0235	0.3467 1.0202
0.6926 1.0240	0.4438 1.0337	2448288 +	0.4488 1.0223	0.3494 1.0219
0.6964 1.0204	0.4477 1.0355	0.2887 1.0255	0.4517 1.0270	0.3523 1.0222
0.7002 1.0183	0.4514 1.0367	0.2915 1.0276	0.4620 1.0284	0.3550 1.0228
0.7043 1.0265	0.4556 1.0358	0.2962 1.0319	0.4688 1.0321	0.3686 1.0249
0.7084 1.0293	0.4594 1.0310	0.3008 1.0380	0.4713 1.0260	0.3713 1.0266
0.7144 1.0318	0.4631 1.0286	0.3036 1.0295	0.4755 1.0261	0.3739 1.0281
2447900 +	0.4669 1.0249	0.3063 1.0273	0.4795 1.0392	0.3765 1.0220
0.2806 1.0332	0.4706 1.0213	0.3094 1.0258	0.4822 1.0315	0.3790 1.0295
0.2870 1.0339	0.4745 1.0184	0.3123 1.0286	0.4881 1.0323	0.3822 1.0222
0.2900 1.0310	0.4782 1.0250	0.3177 1.0327	0.4910 1.0291	0.3849 1.0236
0.2931 1.0278	0.4820 1.0309	0.3223 1.0166	0.4938 1.0276	0.3901 1.0214
0.2962 1.0226	0.4859 1.0335	0.3262 1.0184	0.4969 1.0235	0.3926 1.0289
0.2992 1.0194	0.4897 1.0307	0.3310 1.0327	0.4999 1.0394	0.3952 1.0301
0.3023 1.0236	0.4934 1.0314	0.3357 1.0436	0.5054 1.0384	0.3978 1.0275
0.3054 1.0349	0.4975 1.0186	0.3386 1.0392	0.5082 1.0324	0.4005 1.0303
0.3117 1.0314	0.5010 1.0225	0.3416 1.0371	0.5143 1.0355	0.4031 1.0287
0.3147 1.0336	0.5048 1.0176	0.3444 1.0383	0.5208 1.0350	0.4059 1.0236
0.3180 1.0349	0.5087 1.0173	0.3474 1.0503	0.5259 1.0354	0.4086 1.0296
0.3212 1.0360	0.5126 1.0169	0.3516 1.0325	0.5312 1.0299	0.4118 1.0322
0.3242 1.0268	0.5165 1.0288	0.3547 1.0380	2448289 +	0.4151 1.0354
0.3274 1.0324	0.5204 1.0245	0.3621 1.0246	0.2588 1.0363	0.4177 1.0241
0.3306 1.0337	0.5243 1.0220	0.3652 1.0610	0.2621 1.0337	0.4233 1.0235
0.3340 1.0289	0.5281 1.0276	0.3679 1.0227	0.2651 1.0359	0.4260 1.0252
0.3372 1.0241	0.5323 1.0297	0.3709 1.0269	0.2684 1.0276	0.4291 1.0268
0.3403 1.0282	0.5365 1.0262	0.3747 1.0335	0.2717 1.0226	0.4319 1.0254
0.3433 1.0297	0.5406 1.0203	0.3775 1.0397	0.2746 1.0282	0.4348 1.0337
0.3464 1.0363	0.5491 1.0294	0.3809 1.0710	0.2782 1.0267	0.4378 1.0309
0.3494 1.0275	0.5533 1.0388	0.3838 1.0673	0.2810 1.0179	0.4406 1.0383
0.3544 1.0197	0.5596 1.0342	0.3889 1.0304	0.2845 1.0264	0.4435 1.0290
0.3574 1.0232	0.5637 1.0281	0.3917 1.0239	0.2875 1.0170	0.4463 1.0289
0.3607 1.0263	0.5678 1.0283	0.3945 1.0217	0.2902 1.0220	0.4492 1.0248
0.3645 1.0236	0.5721 1.0257	0.3975 1.0332	0.2969 1.0298	0.4550 1.0277
0.3737 1.0232	0.5762 1.0243	0.4004 1.0231	0.3002 1.0267	0.4641 1.0228
0.3832 1.0278	0.5827 1.0285	0.4036 1.0760	0.3041 1.0267	0.4671 1.0238
0.3870 1.0273	0.5899 1.0329	0.4063 1.0204	0.3068 1.0214	0.4698 1.0391
0.3909 1.0306	0.5939 1.0306	0.4099 1.0237	0.3095 1.0256	0.4725 1.0302
0.3948 1.0283	0.5979 1.0348	0.4128 1.0308	0.3155 1.0247	0.4753 1.0323
0.3989 1.0279	0.6021 1.0305	0.4156 1.0356	0.3181 1.0184	0.4780 1.0381
0.4032 1.0283	0.6061 1.0228	0.4185 1.0289	0.3208 1.0195	0.4818 1.0324
0.4070 1.0314	0.6106 1.0166	0.4214 1.0255	0.3265 1.0324	0.4847 1.0264
0.4107 1.0292	0.6146 1.0217	0.4243 1.0274	0.3297 1.0342	0.4875 1.0232
0.4144 1.0308	0.6189 1.0297	0.4271 1.0288	0.3325 1.0361	0.4902 1.0255
0.4223 1.0312	0.6229 1.0394	0.4301 1.0232	0.3353 1.0338	0.4931 1.0160
0.4260 1.0302	0.6271 1.0360	0.4330 1.0174	0.3380 1.0275	0.4958 1.0218
0.4299 1.0303	0.6311 1.0425	0.4371 1.0173	0.3409 1.0196	0.4986 1.0226

0.5014 1.0247	0.5097 1.0325	0.5184 1.0285	0.5273 1.0150	0.5360 1.0241
0.5042 1.0345	0.5126 1.0309	0.5214 1.0292	0.5304 1.0121	0.5389 1.0289
0.5071 1.0314	0.5154 1.0375	0.5244 1.0220	0.5333 1.0127	0.5419 1.0349

A third star in the Praesepe cluster, KW 207, was also observed as a possible variable star in the 1989 season, but only on two nights. For safety purpose two other comparison stars, KW 276 and KW 348, were also measured. The reduction was done for KW 207 compared to KW 276, and KW 348 was also checked to KW 276. The journal of KW 207 and KW 348 are given in Table 87.

Table 87. Journal of observations of KW 207, KW 276 and KW 348 in Praesepe

Date (UT)	HJD 2400000+	Length day	Number of obs.	Comp.
Feb 10/11 1989	47568	0.2151	52	KW 207 - KW 276
Feb 11/12 1989	47569	0.1549	35	KW 207 - KW 276
Feb 10/11 1989	47568	0.2201	54	KW 348 - KW 276
Feb 11/12 1989	47569	0.1556	36	KW 348 - KW 276

It contains the date, HJD, length and number of observation. The last coloumn gives which stars were reduced to each other. The light curves are shown in Fig 61. The light curves of KW 207 show some slight periodicity on both nights, but they are not as definite as in the case of the other two variable stars (KW 445 nad KW 323). There are only trends for KW 348 on both nights. Both stars seem to be good choices as comparison stars. The differential data are given in Table 88.

Table 88. The differential data for KW 207 – KW 276 and KW 348 – KW 276 in V light

2447568 +	0.4122 0.1375	0.5019 0.1346	0.2868 0.1271	0.3680 0.1301
KW 207 – KW	0.4164 0.1315	0.5050 0.1292	0.2920 0.1291	0.3722 0.1292
276	0.4225 0.1476	0.5097 0.1292	0.2973 0.1259	0.3757 0.1343
0.3521 0.1313	0.4264 0.1333	0.5127 0.1361	0.3030 0.1351	0.3800 0.1264
0.3571 0.1412	0.4343 0.1274	0.5160 0.1370	0.3095 0.1333	0.3837 0.1191
0.3614 0.1479	0.4379 0.1207	0.5201 0.1429	0.3200 0.1229	0.3873 0.1319
0.3644 0.1430	0.4413 0.1212	0.5255 0.1310	0.3237 0.1291	0.3916 0.1313
0.3691 0.1354	0.4457 0.1378	0.5310 0.1341	0.3277 0.1257	0.3951 0.1254
0.3742 0.1267	0.4513 0.1348	0.5346 0.1435	0.3313 0.1232	0.3985 0.1307
0.3774 0.1331	0.4626 0.1251	0.5380 0.1314	0.3357 0.1212	0.4026 0.1239
0.3804 0.1223	0.4656 0.1271	0.5432 0.1369	0.3393 0.1205	0.4058 0.1303
0.3862 0.1195	0.4684 0.1276	0.5466 0.1403	0.3430 0.1228	0.4152 0.1272
0.3918 0.1205	0.4787 0.1320	0.5515 0.1507	0.3485 0.1284	0.4183 0.1329
0.3950 0.1286	0.4818 0.1380	0.5548 0.1524	0.3522 0.1309	0.4229 0.1322
0.4013 0.1291	0.4855 0.1405	0.5617 0.1361	0.3571 0.1282	0.4266 0.1410
0.4041 0.1303	0.4957 0.1355	0.5672 0.1316	0.3609 0.1354	0.4302 0.1334
0.4074 0.1315	0.4983 0.1392	2447569 +	0.3645 0.1377	0.4336 0.1283

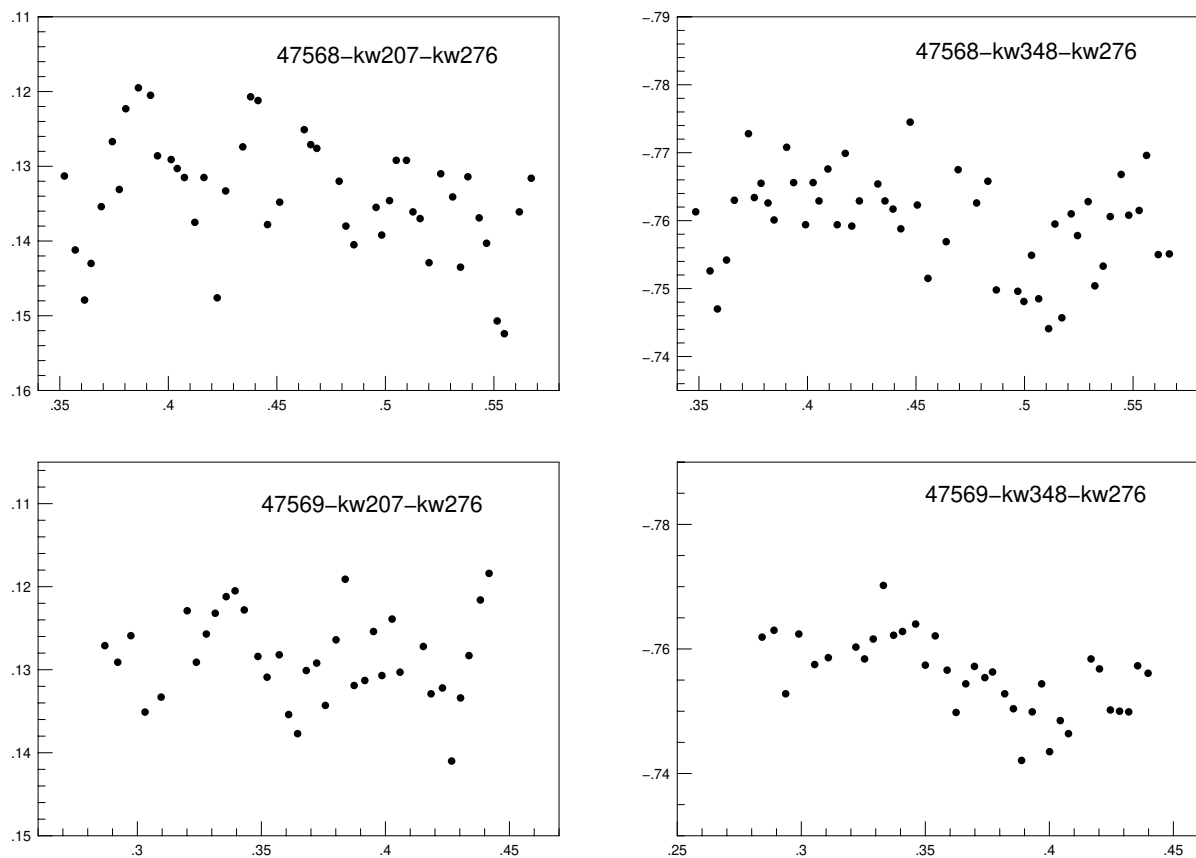


Figure 61: Light curves of KW 207 to KW 276 and KW 348 to KW 276 in V colour.

0.4382	0.1216	0.4053	-0.7629	0.4997	-0.7481	0.2841	-0.7619	0.3739	-0.7554
0.4417	0.1184	0.4094	-0.7676	0.5032	-0.7549	0.2889	-0.7630	0.3770	-0.7563
2447568 +		0.4137	-0.7594	0.5065	-0.7485	0.2936	-0.7528	0.3819	-0.7528
KW 348 - KW		0.4174	-0.7699	0.5111	-0.7441	0.2989	-0.7624	0.3854	-0.7504
276		0.4204	-0.7592	0.5140	-0.7595	0.3053	-0.7575	0.3887	-0.7421
0.3485	-0.7613	0.4239	-0.7629	0.5172	-0.7457	0.3108	-0.7586	0.3930	-0.7499
0.3551	-0.7526	0.4324	-0.7654	0.5215	-0.7610	0.3219	-0.7603	0.3968	-0.7544
0.3585	-0.7470	0.4357	-0.7629	0.5244	-0.7578	0.3254	-0.7584	0.4000	-0.7435
0.3627	-0.7542	0.4394	-0.7617	0.5293	-0.7628	0.3289	-0.7616	0.4043	-0.7485
0.3663	-0.7630	0.4430	-0.7588	0.5324	-0.7504	0.3330	-0.7702	0.4076	-0.7464
0.3728	-0.7728	0.4473	-0.7745	0.5362	-0.7533	0.3371	-0.7622	0.4167	-0.7584
0.3755	-0.7634	0.4506	-0.7623	0.5395	-0.7606	0.3407	-0.7628	0.4201	-0.7568
0.3786	-0.7655	0.4555	-0.7515	0.5445	-0.7668	0.3460	-0.7640	0.4245	-0.7502
0.3818	-0.7626	0.4639	-0.7569	0.5480	-0.7608	0.3499	-0.7574	0.4282	-0.7500
0.3846	-0.7601	0.4694	-0.7675	0.5528	-0.7615	0.3539	-0.7621	0.4319	-0.7499
0.3904	-0.7708	0.4779	-0.7626	0.5562	-0.7696	0.3587	-0.7566	0.4355	-0.7573
0.3936	-0.7656	0.4831	-0.7658	0.5616	-0.7550	0.3623	-0.7498	0.4397	-0.7561
0.3991	-0.7594	0.4870	-0.7498	0.5667	-0.7551	0.3662	-0.7544		
0.4026	-0.7656	0.4969	-0.7496	2447569 +		0.3697	-0.7572		

If a general investigation is carried out for the δ Scuti stars in the young open cluster Praesepe, based on space data, these data will hopefully be valuable for getting a longer timebase. The archived files are the following: kw445–kw284.hjdarch (Table 84), kw323–kw284.hjdarch (Table 86), kw207–kw276.hjdarch and kw348–kw276.hjdarch (together in Table 88).

4 CVn and HD 108100

A multisite international campaign was organized by M. Breger for the 4 CVn δ Scuti star and for the HD 108100 possible γ Dor type star. Originally HD 108100 was a single comparison star for 4 CVn. The light curve and investigation of 4 CVn was published in the paper Breger et al. (1999). The research for HD 108110, the γ Doradus star was discussed in Breger et al. (1997). The Hungarian contribution was used in both papers. Since the data of the campaign was not published, we present here the Hungarian contribution to the campaign for both stars with the permission of Michel Breger. The observations were obtained in Johnson V colour on three consecutive nights, namely 2450150, 2450151 and 2450152. Two comparison stars were used, HR 4843 and HR 4728. The journal of the Hungarian contribution to the campaign is in Table 89.

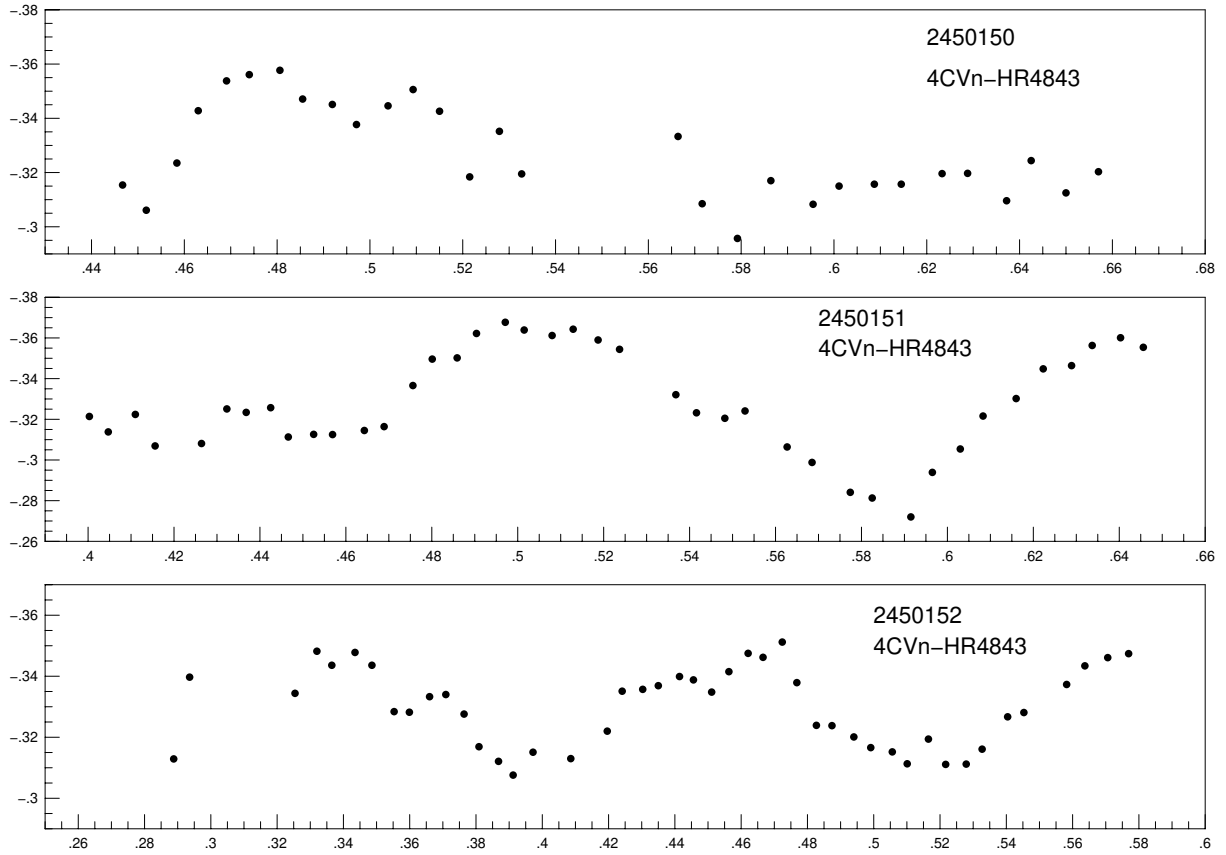
Table 89. Journal of Hungarian observations of 4 CVn and HD 108100

Date	HJD	Length	Number	Length	Number
(UT)	2400000+	4 CVn	4 CVn	HD 108100	HD 108100
		day		day	
March 7/8 1996	50150	0.2103	30	0.1909	14
March 8/9 1996	50151	0.2453	33	0.2180	18
March 9/10 1996	50152	0.2881	44	0.2680	23

The light curves are shown for both comparison stars, for HR 4843 and HR 4728, separately in Fig 62 and 63. The differential light curves of the two comparison stars, HR 4843 – HR 4728 are also shown (Fig 64). The corresponding data files are given in Table 90, 91 and 92.

Table 90. The differential data for 4 CVn – HR 4843 in V colour

2450150 +	.4971 –0.3377	.5864 –0.3170	.6570 –0.3203	.4466 –0.3113
.4467 –0.3154	.5039 –0.3446	.5955 –0.3083	2450151 +	.4525 –0.3126
.4518 –0.3061	.5093 –0.3506	.6011 –0.3150	.4003 –0.3214	.4569 –0.3125
.4584 –0.3235	.5150 –0.3426	.6087 –0.3157	.4047 –0.3138	.4643 –0.3145
.4630 –0.3428	.5215 –0.3184	.6145 –0.3157	.4110 –0.3224	.4689 –0.3164
.4691 –0.3538	.5279 –0.3352	.6233 –0.3196	.4156 –0.3069	.4756 –0.3366
.4740 –0.3561	.5327 –0.3195	.6288 –0.3197	.4264 –0.3081	.4801 –0.3496
.4806 –0.3577	.5664 –0.3333	.6372 –0.3096	.4323 –0.3251	.4859 –0.3502
.4855 –0.3471	.5716 –0.3085	.6425 –0.3244	.4368 –0.3234	.4904 –0.3622
.4919 –0.3451	.5792 –0.2957	.6500 –0.3125	.4425 –0.3257	.4971 –0.3677

Figure 62: Differential light curves of 4 CVn – HR 4843 in V colour

.5015 -0.3639	.5965 -0.2939	.3365 -0.3436	.4241 -0.3351	.4991 -0.3166
.5080 -0.3612	.6030 -0.3054	.3435 -0.3478	.4303 -0.3357	.5056 -0.3152
.5129 -0.3643	.6083 -0.3216	.3486 -0.3436	.4350 -0.3369	.5101 -0.3113
.5187 -0.3590	.6160 -0.3302	.3553 -0.3284	.4414 -0.3399	.5165 -0.3194
.5237 -0.3544	.6223 -0.3448	.3599 -0.3282	.4456 -0.3388	.5217 -0.3111
.5368 -0.3321	.6289 -0.3464	.3660 -0.3333	.4511 -0.3348	.5279 -0.3112
.5416 -0.3232	.6337 -0.3563	.3709 -0.3340	.4563 -0.3415	.5327 -0.3161
.5482 -0.3205	.6403 -0.3601	.3764 -0.3276	.4621 -0.3475	.5404 -0.3267
.5529 -0.3241	.6456 -0.3554	.3809 -0.3169	.4666 -0.3462	.5453 -0.3281
.5627 -0.3064	2450152 +	.3868 -0.3121	.4724 -0.3512	.5582 -0.3373
.5685 -0.2988	.2888 -0.3129	.3912 -0.3076	.4768 -0.3379	.5637 -0.3434
.5774 -0.2841	.2936 -0.3397	.3972 -0.3151	.4827 -0.3239	.5706 -0.3461
.5825 -0.2813	.3254 -0.3344	.4086 -0.3130	.4874 -0.3238	.5769 -0.3474
.5915 -0.2720	.3320 -0.3482	.4196 -0.3220	.4940 -0.3201	

Table 91. The differential data for 4 CVn – HR 4728 in V colour

2450150 +	.4584 0.9063	.4740 0.8902	.4919 0.8809	.5093 0.9069
.4467 0.9119	.4630 0.9070	.4806 0.8782	.4971 0.8892	.5150 0.8878
.4518 0.9141	.4691 0.8936	.4855 0.8919	.5039 0.8963	.5215 0.9221

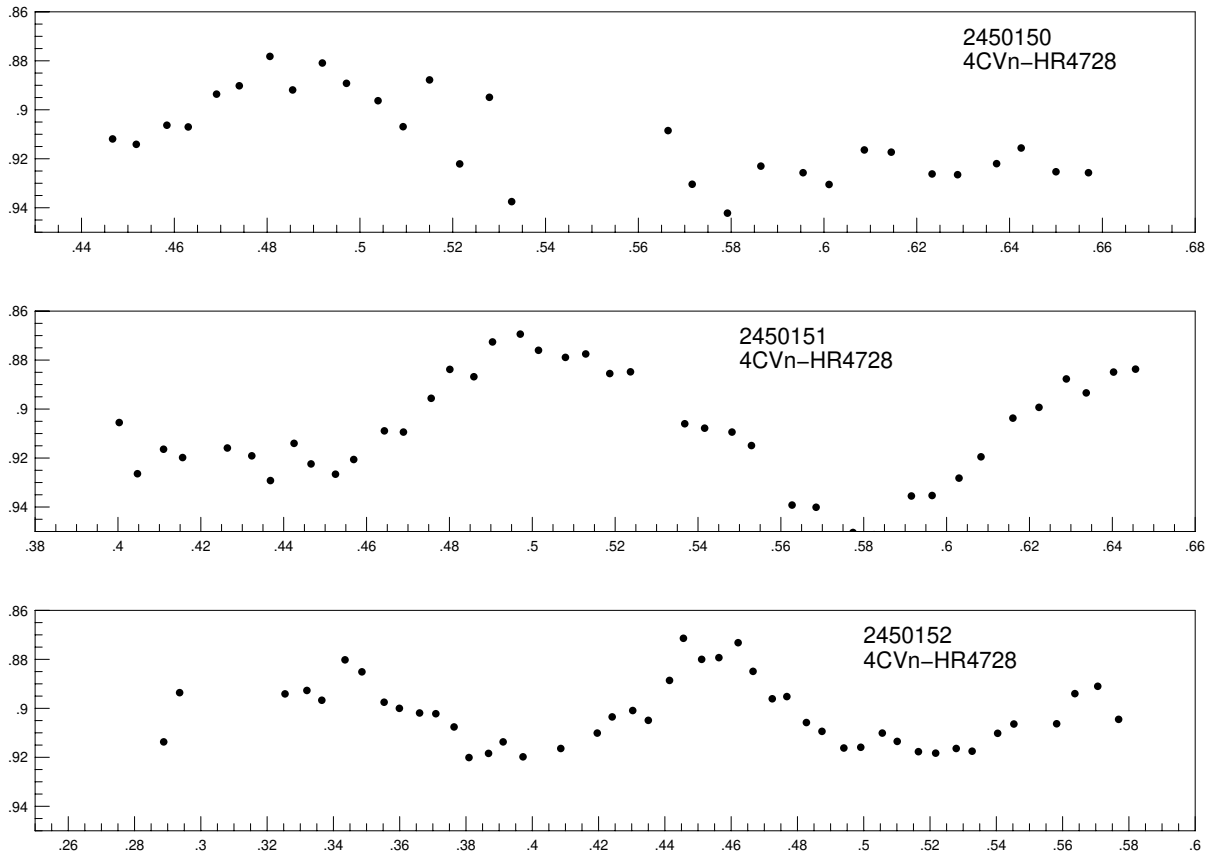
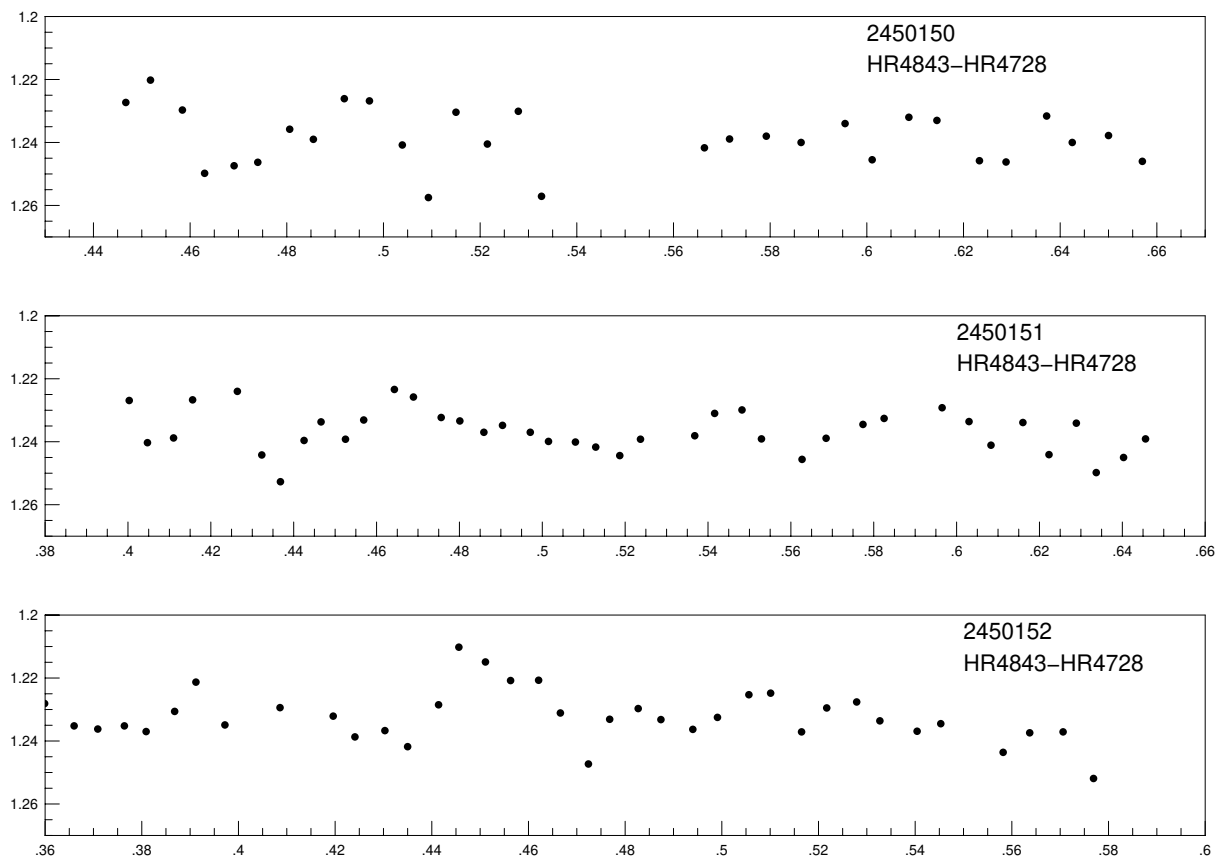


Figure 63: Differential light curves of 4 CVn - HR 4728 in V colour

.5279 0.8949	.4264 0.9159	.5482 0.9094	.3365 0.8967	.4621 0.8732
.5327 0.9375	.4323 0.9191	.5529 0.9149	.3435 0.8802	.4666 0.8849
.5664 0.9085	.4368 0.9292	.5627 0.9392	.3486 0.8851	.4724 0.8961
.5716 0.9304	.4425 0.9140	.5685 0.9401	.3553 0.8975	.4768 0.8952
.5792 0.9422	.4466 0.9224	.5774 0.9504	.3599 0.9000	.4827 0.9058
.5864 0.9230	.4525 0.9266	.5825 0.9513	.3660 0.9019	.4874 0.9094
.5955 0.9257	.4569 0.9206	.5915 0.9355	.3709 0.9022	.4940 0.9162
.6011 0.9305	.4643 0.9089	.5965 0.9353	.3764 0.9076	.4991 0.9159
.6087 0.9164	.4689 0.9094	.6030 0.9282	.3809 0.9201	.5056 0.9101
.6145 0.9173	.4756 0.8956	.6083 0.9195	.3868 0.9184	.5101 0.9135
.6233 0.9262	.4801 0.8838	.6160 0.9037	.3912 0.9137	.5165 0.9177
.6288 0.9265	.4859 0.8868	.6223 0.8993	.3972 0.9198	.5217 0.9183
.6372 0.9220	.4904 0.8726	.6289 0.8877	.4086 0.9164	.5279 0.9164
.6425 0.9156	.4971 0.8694	.6337 0.8934	.4196 0.9101	.5327 0.9175
.6500 0.9253	.5015 0.8760	.6403 0.8849	.4241 0.9035	.5404 0.9102
.6570 0.9257	.5080 0.8789	.6456 0.8837	.4303 0.9009	.5453 0.9064
2450151 +	.5129 0.8775	2450152 +	.4350 0.9049	.5582 0.9063
.4003 0.9055	.5187 0.8855	.2888 0.9137	.4414 0.8886	.5637 0.8940
.4047 0.9264	.5237 0.8848	.2936 0.8936	.4456 0.8714	.5706 0.8910
.4110 0.9164	.5368 0.9060	.3254 0.8941	.4511 0.8800	.5769 0.9045
.4156 0.9198	.5416 0.9078	.3320 0.8927	.4563 0.8793	

Table 92. The differential data for HR 4843 – HR 4728 in *V* colour

2450150 +	.5716 1.2389	.4264 1.2240	.5237 1.2392	2450152 +
.4467 1.2273	.5792 1.2380	.4323 1.2442	.5368 1.2381	.2888 1.2266
.4518 1.2202	.5864 1.2400	.4368 1.2527	.5416 1.2310	.2936 1.2333
.4584 1.2297	.5955 1.2340	.4425 1.2396	.5482 1.2299	.3254 1.2285
.4630 1.2498	.6011 1.2455	.4466 1.2337	.5529 1.2391	.3320 1.2408
.4691 1.2474	.6087 1.2320	.4525 1.2392	.5627 1.2456	.3365 1.2403
.4740 1.2463	.6145 1.2330	.4569 1.2331	.5685 1.2389	.3435 1.2280
.4806 1.2358	.6233 1.2458	.4643 1.2234	.5774 1.2345	.3486 1.2287
.4855 1.2390	.6288 1.2462	.4689 1.2258	.5825 1.2326	.3553 1.2259
.4919 1.2261	.6372 1.2316	.4756 1.2323	.5965 1.2292	.3599 1.2281
.4971 1.2268	.6425 1.2400	.4801 1.2334	.6030 1.2336	.3660 1.2352
.5039 1.2408	.6500 1.2378	.4859 1.2370	.6083 1.2411	.3709 1.2362
.5093 1.2575	.6570 1.2460	.4904 1.2348	.6160 1.2339	.3764 1.2352
.5150 1.2304	2450151 +	.4971 1.2370	.6223 1.2441	.3809 1.2370
.5215 1.2405	.4003 1.2269	.5015 1.2399	.6289 1.2341	.3868 1.2306
.5279 1.2301	.4047 1.2403	.5080 1.2401	.6337 1.2498	.3912 1.2213
.5327 1.2571	.4110 1.2388	.5129 1.2417	.6403 1.2450	.3972 1.2349
.5664 1.2417	.4156 1.2267	.5187 1.2444	.6456 1.2391	.4086 1.2294

Figure 64: Differential light curves of HR 4843 – HR 4728 in *V* colour

.4196 1.2321	.4511 1.2149	.4827 1.2297	.5165 1.2371	.5582 1.2436
.4241 1.2387	.4563 1.2208	.4874 1.2332	.5217 1.2295	.5637 1.2374
.4303 1.2367	.4621 1.2207	.4940 1.2363	.5279 1.2276	.5706 1.2371
.4350 1.2418	.4666 1.2311	.4991 1.2325	.5327 1.2336	.5769 1.2519
.4414 1.2285	.4724 1.2473	.5056 1.2253	.5404 1.2369	
.4456 1.2102	.4768 1.2331	.5101 1.2248	.5453 1.2345	

The HD 108100 γ Doradus star was reduced to both comparisons. The differential light curves are presented in Fig 65, 66 and 67. The tables are given in Table 93 and 94 for the γ Dor to the comparisons. The data comparing the two comparisons to each other is given in Table 95.

Table 93. The differential data for HD 108100 – HR 4843 in V colour

2450150 +	.5121 0.7307	.6186 0.7726	.4295 0.7513	.4939 0.7798
.4551 0.7166	.5245 0.7200	.6336 0.7758	.4395 0.7401	.5050 0.7775
.4659 0.7116	.5382 0.7471	.6460 0.7622	.4494 0.7787	.5159 0.7685
.4772 0.7218	.5758 0.7316	2450151 +	.4610 0.7805	.5281 0.7839
.4883 0.7626	.5898 0.7607	.4076 0.7621	.4720 0.7892	.5449 0.7750
.5009 0.7441	.6050 0.7538	.4184 0.7936	.4829 0.7872	.5589 0.7885

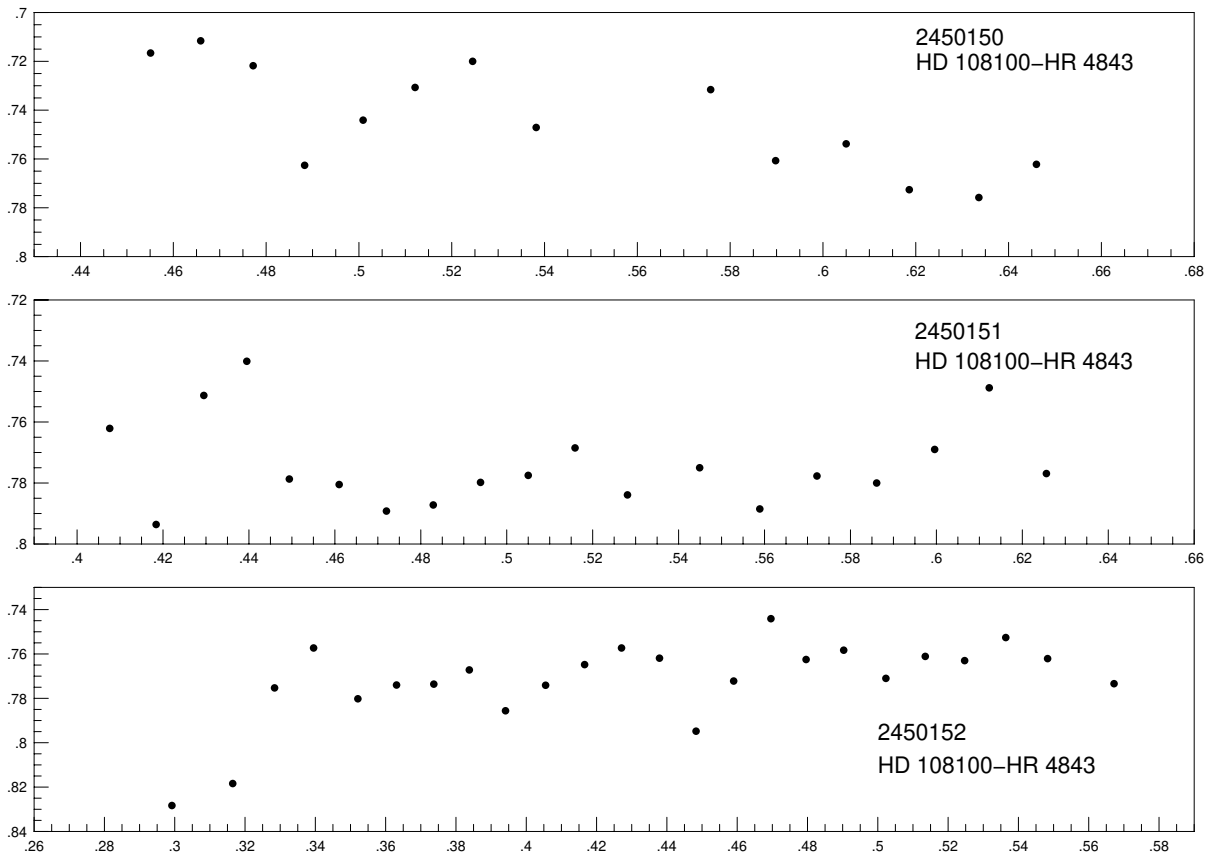


Figure 65: Differential light curves of HD 108100 – HR 4843 in V colour

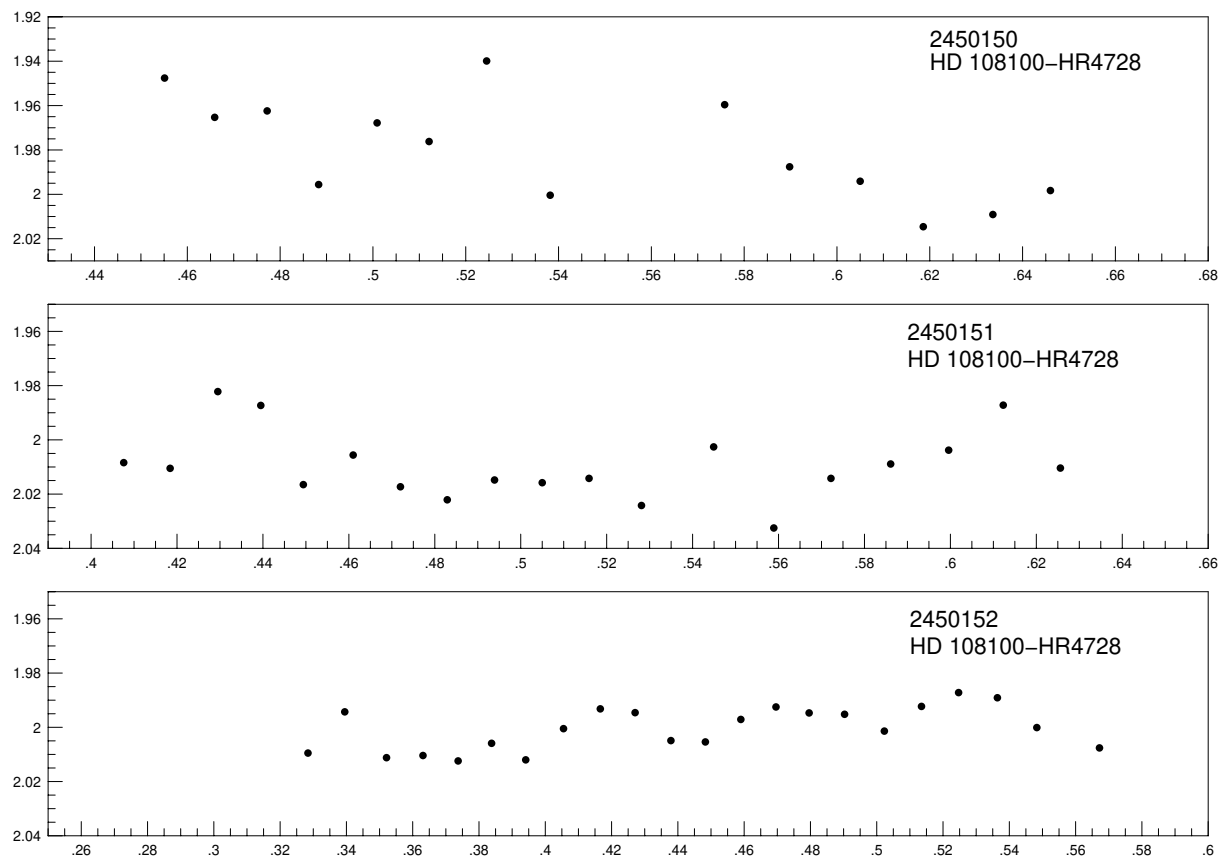


Figure 66: Differential light curves of HD 108100 – HR 4728 in V colour

.5722 0.7777	.2992 0.8283	.3737 0.7736	.4379 0.7619	.5023 0.7710
.5861 0.7800	.3165 0.8184	.3838 0.7672	.4483 0.7948	.5135 0.7611
.5996 0.7690	.3284 0.7753	.3941 0.7856	.4590 0.7722	.5247 0.7630
.6123 0.7488	.3395 0.7573	.4055 0.7741	.4696 0.7441	.5364 0.7526
.6256 0.7769	.3521 0.7802	.4166 0.7648	.4796 0.7625	.5483 0.7621
2450152 +	.3631 0.7740	.4271 0.7573	.4903 0.7583	.5672 0.7734

Table 94. The differential data for HD 108100 – HR 4728 in V colour

2450150 +	.6186 2.0146	.4939 2.0148	.2992 2.0565	.4379 2.0049
.4551 1.9476	.6336 2.0091	.5050 2.0158	.3165 2.0462	.4483 2.0054
.4659 1.9653	.6460 1.9983	.5159 2.0142	.3284 2.0095	.4590 1.9971
.4772 1.9624	2450151 +	.5281 2.0242	.3395 1.9943	.4696 1.9925
.4883 1.9956	.4076 2.0084	.5449 2.0026	.3521 2.0112	.4796 1.9947
.5009 1.9678	.4184 2.0105	.5589 2.0325	.3631 2.0104	.4903 1.9952
.5121 1.9762	.4295 1.9822	.5722 2.0142	.3737 2.0124	.5023 2.0014
.5245 1.9399	.4395 1.9873	.5861 2.0089	.3838 2.0059	.5135 1.9923
.5382 2.0004	.4494 2.0165	.5996 2.0038	.3941 2.0120	.5247 1.9872
.5758 1.9596	.4610 2.0056	.6123 1.9872	.4055 2.0005	.5364 1.9891
.5898 1.9876	.4720 2.0173	.6256 2.0104	.4166 1.9932	.5483 2.0001
.6050 1.9941	.4829 2.0221	2450152 +	.4271 1.9946	.5672 2.0076

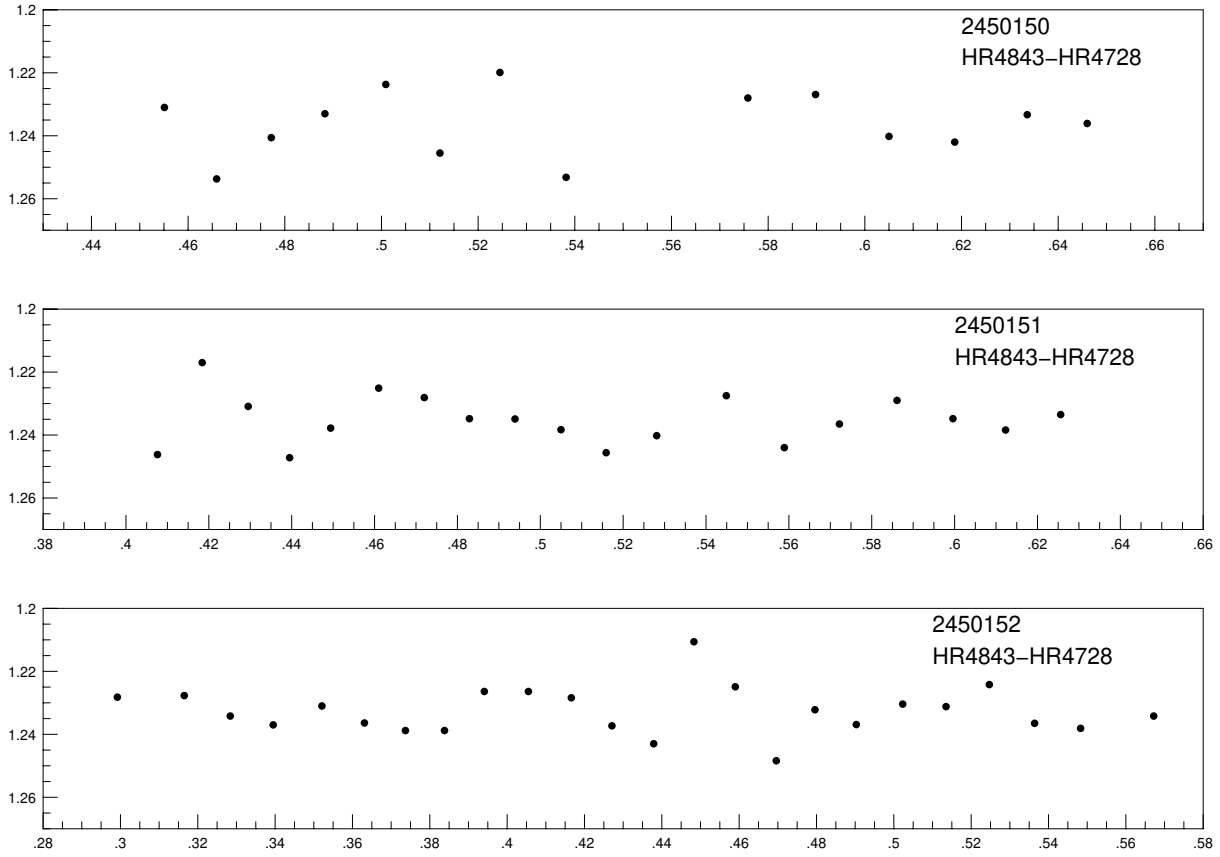


Figure 67: Differential light curves of HR 4843 – HR 4728 for γ Dor in V colour

Table 95. The differential data of HR 4843 – HR 4728 for γ Dor in V colour

2450150 +	.6186 1.2420	.4939 1.2349	.2992 1.2282	.4379 1.2430
.4551 1.2310	.6336 1.2333	.5050 1.2383	.3165 1.2277	.4483 1.2106
.4659 1.2537	.6460 1.2361	.5159 1.2456	.3284 1.2342	.4590 1.2249
.4772 1.2406	2450151 +	.5281 1.2402	.3395 1.2370	.4696 1.2484
.4883 1.2330	.4076 1.2462	.5449 1.2275	.3521 1.2310	.4796 1.2322
.5009 1.2237	.4184 1.2170	.5589 1.2440	.3631 1.2364	.4903 1.2369
.5121 1.2455	.4295 1.2309	.5722 1.2365	.3737 1.2388	.5023 1.2304
.5245 1.2199	.4395 1.2472	.5861 1.2290	.3838 1.2388	.5135 1.2312
.5382 1.2532	.4494 1.2378	.5996 1.2348	.3941 1.2264	.5247 1.2242
.5758 1.2280	.4610 1.2251	.6123 1.2384	.4055 1.2264	.5364 1.2365
.5898 1.2269	.4720 1.2281	.6256 1.2335	.4166 1.2284	.5483 1.2381
.6050 1.2402	.4829 1.2348	2450152 +	.4271 1.2373	.5672 1.2342

Although observations on only three nights are presented here, hopefully, sooner or later other campaign data will be archived. The archived files of the data currently presented are: 4cvn–HR4843.arch (Table 90), 4cvn–HR4728.arch (Table 91), HR4843–HR4728.arch (Table 92), HD108100–HR4843.arch (Table 93),

HD108100–HR4728.arch (Table 94) and HR4843–HR4728GD.arch (Table 95).

ϵ Cephei = HR 8494

ϵ Cep was a very contradicting variable star, identified as a δ Scuti type. It was discovered by M. Breger in 1966 with extremely short period, 0.042 day and small amplitude, about 0.025 magnitude. The extremely low amplitude made the detection very difficult. Fesen (1973) found the light curve to be irregular both in period and amplitude. The ϵ Cep was also observed in Spain in 1975 and 1977 (Lopez de Coca et al. 1979). Two pulsational periods were confirmed, however, it was concluded that the mean magnitude difference between ϵ Cep and the comparison star is different for 1975 and 1977 by about 0.01 magnitude. Obviously it was a challenge for each observer to get more information on the extreme behaviour of ϵ Cep. I tried to get further information over many years. Observations were carried out in Konkoly Observatory in three seasons, in 1981, 1982 and 1988. The extreme low amplitude required extreme high quality sky for getting the proper precision. Unfortunately not enough data were collected in any of the three seasons, so I did not present any publication. However, I publish the data here for the astronomical community.

Table 96. Journal of the Hungarian observations for ϵ Cep

Date (UT)	JD 2400000+	Length day	N. of obs.	Mean V, B, U	Filter	Comp.
Sept 6/7 1981	44854	0.0788	9,9,9	0.6438, -0.4824, -2.1741	VBU	
Sep 7/8 1981	44855	0.1809	20,20,20	-1.0933, -1.3003, -1.2791	VBU	HR 8472
Sep 8/9 1981	44856	0.2700	30,30,29	-1.1022, -1.3050, -1.2808	VBU	HR 8472
Sep 10/11 1982	45223	0.1076	40	-1.1000	V	HR 8472
Sep 11/12 1982	45224	0.2952	106	-1.0957	V	HR 8472
Jul 16/17 1988	47359	0.0845	27	-0.6846	V	
Jul 17/18 1988	47360	0.1032	28	-0.6844	V	
Aug 5/6 1988	47379	0.1314	47	-0.6833	V	
Aug 6/7 1988	47380	0.1822	63	-0.6855	V	
Aug 7/8 1988	47381	0.1302	41	-0.6837	V	
Sep 19/20 1988	47424	0.3144	111	-0.7995	V	
Oct 15/16 1988	47450	0.2838	118	-0.6893	V	
Oct 16/17 1988	47451	0.1347	60	-0.6851	V	

The journal of the Hungarian observations is presented in Table 96. The first four columns give the dates, the JD values, the length of the observations and the number of measurements, respectively. The fifth column contains the mean value of the observations on the given night. For the first three nights three values are given in the fifth column, since the observations were obtained in *VBU* colours (column 6th). On rest of the nights only Johnson *V* filter was used to get more frequent sampling. There is an additional column (7th), where the name of the clearly determined comparison star on the certain night is given. For other nights there is no star given, since regarding the mean values in *V* colours, it seems that altogether four different comparison stars were used.

Unfortunately, I do not have all the information (after forty years) for the comparison stars, so I am not able to identify exactly which comparisons were used at a given night.

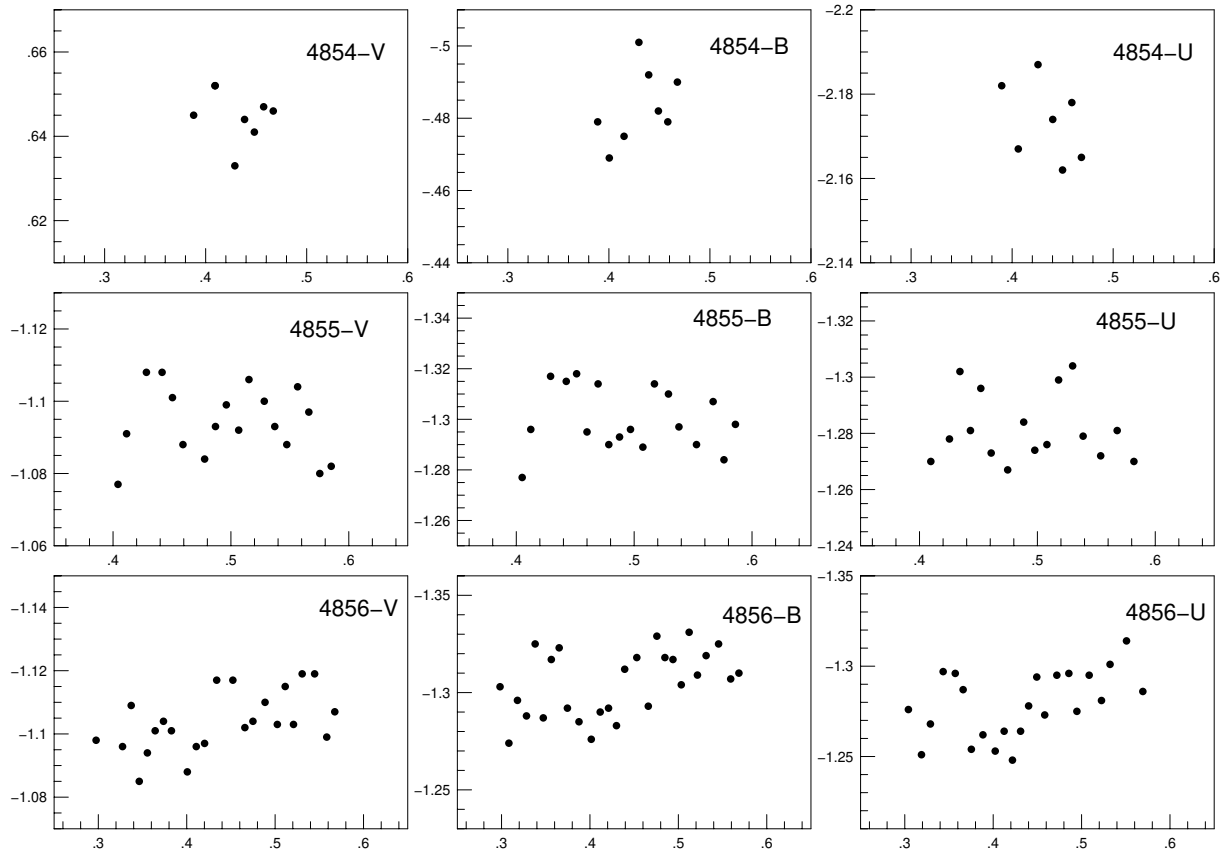
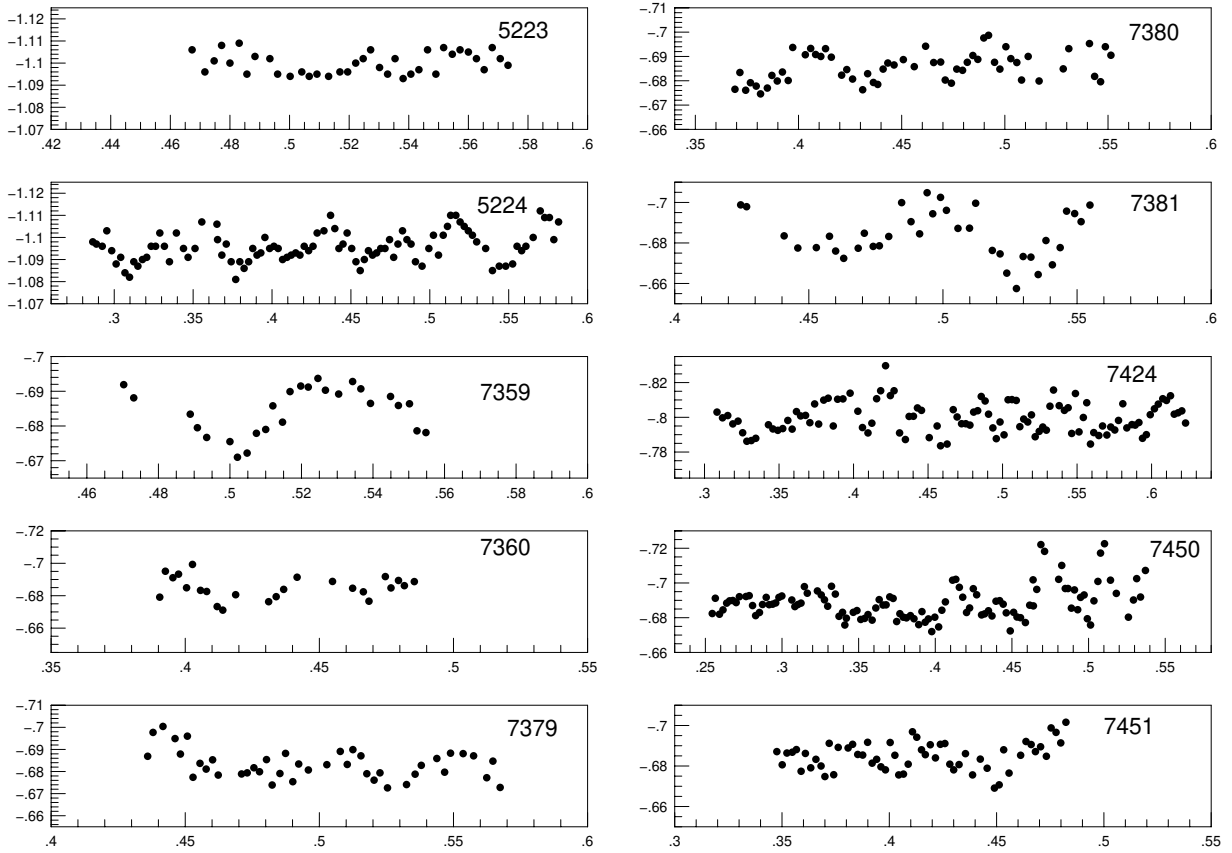


Figure 68: Light curves of ϵ Cep in UBV colour.

I checked comparison stars used in the previous publications. Two comparison stars were used, HR 8472 and HR 8613. Using the V , B , U values from the literature, I definitely could identify that HR 8472 was observed on the nights 2444855, 4856, 5223 and 5224. These are marked in the 7th column of Table 96. All the V , B and U mean values in Table 96 agree with the values of Breger (1966), Fesen (1973) and Lopez de Coca et al. (1979). However, there are seven nights with around -0.68 mean value in V colour (2445359, 5360, 5379, 5380, 5381, 5450 and 5351). Since the mean value of ϵ Cep relative to the other comparison, HR 8613, is around -0.45 in V , it is obvious that not the usually used second comparison was used. In addition, the mean values on the nights 2444854 and 2445424 are different, around 0.64 and -0.80 in V colour.

Although, I did not find any clue to solve the problem of the comparison stars, I publish the original relative values. The data are separated, so Table 97 contains the nights with V , B and U measurements and Table 98 gives the nights with only V colours. The name of only the clearly determined comparisons are given in the tables, otherwise only “comp” are marked in general. For further investigation the only solution is to normalize all the nights for the zero mean value.

I also had incomplete information for the time of the observations. Sometimes the protocol of the observation contained both the time in the hour, minutes, seconds and fraction of the day. However, sometimes only the fraction of the day was given. In addition, observations were obtained both in CEST (summer time) or in CET. Using the

Figure 69: Light curves of ϵ Cep in V colour.

US Naval Observatory time converter software, it was checked that the fractions are in UT both over CEST time and CET period. However, if these data are going to be combined with other dataset, it is suggested to check the possible 1-2 hour difference in time. The times were not corrected for light-time effect. The light curves are shown in Fig 68 for UBV observation and in Fig 69 for the V observations. Despite the many incompleteness, I decided to publish these data, because the light curves definitely show the variation of ϵ Cep, although the amplitude of the light variation proved to be really low.

Table 97. The differential data for ϵ Cep – comparison in VBU band

V colour	ϵ Cep –	0.4869 –1.093	0.5851 –1.082	0.3643 –1.101
ϵ Cep – comp.	HR 8472	0.4961 –1.099	ϵ Cep –	0.3737 –1.104
2444854 +	2444855 +	0.5066 –1.092	HR 8472	0.3827 –1.101
0.3881 +0.645	0.4042 –1.077	0.5153 –1.106	2444856 +	0.3916 –1.067
0.4093 +0.652	0.4115 –1.091	0.5283 –1.100	0.2975 –1.098	0.4007 –1.088
0.4289 +0.633	0.4283 –1.108	0.5372 –1.093	0.3123 –1.096	0.4108 –1.096
0.4385 +0.644	0.4416 –1.108	0.5474 –1.088	0.3274 –1.096	0.4202 –1.097
0.4482 +0.641	0.4504 –1.101	0.5566 –1.104	0.3372 –1.109	0.4339 –1.117
0.4574 +0.647	0.4593 –1.088	0.5661 –1.097	0.3463 –1.085	0.4522 –1.117
0.4669 +0.646	0.4777 –1.084	0.5754 –1.080	0.3555 –1.094	0.4658 –1.102

0.4749 −1.104	0.4424 −1.315	0.3745 −1.292	0.4499 −2.162	0.3189 −1.251
0.4886 −1.110	0.4512 −1.318	0.3876 −1.285	0.4591 −2.178	0.3290 −1.268
0.5025 −1.103	0.4600 −1.295	0.4015 −1.276	0.4686 −2.165	0.3434 −1.297
0.5114 −1.115	0.4694 −1.314	0.4116 −1.290	ϵ Cep −	0.3571 −1.296
0.5208 −1.103	0.4785 −1.290	0.4210 −1.292	HR 8472	0.3660 −1.287
0.5306 −1.119	0.4876 −1.293	0.4300 −1.283	2444855 +	0.3753 −1.254
0.5447 −1.119	0.4969 −1.296	0.4393 −1.312	0.4096 −1.270	0.3884 −1.262
0.5584 −1.099	0.5074 −1.289	0.4530 −1.318	0.4254 −1.278	0.4023 −1.253
0.5675 −1.107	0.5172 −1.314	0.4660 −1.293	0.4343 −1.302	0.4124 −1.264
B colour	0.5291 −1.310	0.4757 −1.329	0.4432 −1.281	0.4218 −1.248
ϵ Cep − comp.	0.5380 −1.297	0.4848 −1.318	0.4520 −1.296	0.4310 −1.264
2444854 +	0.5529 −1.290	0.4939 −1.317	0.4608 −1.273	0.4401 −1.278
0.3889 −0.479	0.5670 −1.307	0.5033 −1.304	0.4748 −1.267	0.4493 −1.294
0.4004 −0.469	0.5762 −1.284	0.5122 −1.331	0.4884 −1.284	0.4583 −1.273
0.4150 −0.475	0.5859 −1.290	0.5216 −1.309	0.4978 −1.274	0.4720 −1.295
0.4297 −0.501	ϵ Cep −	0.5314 −1.319	0.5081 −1.276	0.4856 −1.296
0.4394 −0.492	HR 8472	0.5455 −1.325	0.5180 −1.299	0.4947 −1.275
0.4490 −0.482	2444856 +	0.5592 −1.307	0.5299 −1.304	0.5086 −1.295
0.4583 −0.479	0.2983 −1.303	0.5685 −1.310	0.5388 −1.279	0.5225 −1.281
0.4678 −0.490	0.3083 −1.274	U colour	0.5537 −1.272	0.5322 −1.301
ϵ Cep −	0.3180 −1.296	ϵ Cep − comp.	0.5677 −1.281	0.5508 −1.314
HR 8472	0.3282 −1.288	2444854 +	0.5819 −1.270	0.5693 −1.286
2444855 +	0.3380 −1.325	0.3897 −2.182	ϵ Cep −	
0.4050 −1.277	0.3472 −1.287	0.4061 −2.167	HR 8472	
0.4123 −1.296	0.3563 −1.317	0.4256 −2.187	2444856 +	
0.4291 −1.317	0.3652 −1.323	0.4402 −2.174	0.3041 −1.276	

Table 98. The differential data for ϵ Cep − comparison only in V light

V colour	0.5131 −1.094	0.5627 −1.102	0.3150 −1.087	0.3770 −1.081
ϵ Cep −	0.5169 −1.096	0.5653 −1.097	0.3179 −1.090	0.3796 −1.089
HR 8472	0.5195 −1.096	0.5680 −1.107	0.3206 −1.091	0.3823 −1.086
2445223 +	0.5222 −1.100	0.5707 −1.102	0.3234 −1.096	0.3852 −1.089
0.4673 −1.106	0.5247 −1.102	0.5733 −1.099	0.3262 −1.096	0.3878 −1.095
0.4716 −1.096	0.5272 −1.106	ϵ Cep −	0.3289 −1.102	0.3905 −1.092
0.4747 −1.101	0.5302 −1.098	HR 8472	0.3318 −1.096	0.3929 −1.093
0.4772 −1.108	0.5329 −1.095	2445224 +	0.3350 −1.089	0.3955 −1.100
0.4800 −1.100	0.5354 −1.102	0.2864 −1.098	0.3394 −1.102	0.3985 −1.095
0.4831 −1.109	0.5381 −1.093	0.2887 −1.097	0.3439 −1.095	0.4012 −1.096
0.4857 −1.095	0.5407 −1.095	0.2924 −1.096	0.3468 −1.091	0.4039 −1.095
0.4884 −1.103	0.5434 −1.097	0.2953 −1.103	0.3512 −1.095	0.4067 −1.090
0.4934 −1.102	0.5463 −1.106	0.2984 −1.094	0.3555 −1.107	0.4095 −1.091
0.4960 −1.095	0.5491 −1.095	0.3012 −1.088	0.3651 −1.106	0.4122 −1.092
0.5002 −1.094	0.5517 −1.107	0.3041 −1.091	0.3655 −1.099	0.4150 −1.093
0.5041 −1.096	0.5546 −1.104	0.3068 −1.084	0.3682 −1.092	0.4177 −1.092
0.5066 −1.094	0.5572 −1.106	0.3097 −1.082	0.3710 −1.097	0.4204 −1.096
0.5092 −1.095	0.5600 −1.105	0.3124 −1.089	0.3741 −1.089	0.4232 −1.094

0.4260 −1.096	0.5700 −1.112	0.4367 −0.6839	0.5467 −0.6797	0.4869 −0.6888
0.4286 −1.102	0.5728 −1.109	0.4417 −0.6914	0.5489 −0.6883	0.4898 −0.6976
0.4329 −1.103	0.5758 −1.109	0.4549 −0.6888	0.5536 −0.6881	0.4921 −0.6987
0.4371 −1.110	0.5786 −1.099	0.4624 −0.6846	0.5575 −0.6871	0.4950 −0.6876
0.4398 −1.104	0.5816 −1.107	0.4664 −0.6824	0.5624 −0.6772	0.4976 −0.6848
0.4424 −1.095	ε Cep − comp.	0.4685 −0.6766	0.5647 −0.6847	0.5005 −0.6940
0.4450 −1.097	2447359 +	0.4746 −0.6918	0.5674 −0.6728	0.5029 −0.6891
0.4476 −1.102	0.4703 −0.6919	0.4767 −0.6848	2447380 +	0.5058 −0.6875
0.4505 −1.095	0.4731 −0.6881	0.4795 −0.6894	0.3692 −0.6765	0.5081 −0.6803
0.4532 −1.089	0.4889 −0.6834	0.4817 −0.6862	0.3716 −0.6834	0.5113 −0.6900
0.4559 −1.085	0.4909 −0.6795	0.4854 −0.6887	0.3744 −0.6761	0.5166 −0.6799
0.4585 −1.090	0.4935 −0.6767	2447379 +	0.3767 −0.6792	0.5283 −0.6849
0.4611 −1.094	0.5000 −0.6755	0.4360 −0.6869	0.3795 −0.6778	0.5310 −0.6932
0.4637 −1.092	0.5021 −0.6710	0.4380 −0.6977	0.3816 −0.6746	0.5410 −0.6953
0.4663 −1.093	0.5048 −0.6722	0.4417 −0.7004	0.3849 −0.6770	0.5435 −0.6818
0.4689 −1.095	0.5074 −0.6779	0.4462 −0.6949	0.3871 −0.6822	0.5464 −0.6796
0.4716 −1.095	0.5100 −0.6790	0.4482 −0.6879	0.3897 −0.6799	0.5487 −0.6940
0.4745 −1.099	0.5120 −0.6858	0.4508 −0.6960	0.3922 −0.6836	0.5514 −0.6905
0.4771 −1.091	0.5147 −0.6811	0.4529 −0.6774	0.3950 −0.6801	2447381 +
0.4798 −1.097	0.5168 −0.6899	0.4555 −0.6837	0.3972 −0.6937	0.4246 −0.6988
0.4827 −1.103	0.5198 −0.6915	0.4578 −0.6811	0.4033 −0.6907	0.4268 −0.6979
0.4855 −1.099	0.5219 −0.6912	0.4602 −0.6853	0.4059 −0.6933	0.4408 −0.6835
0.4881 −1.097	0.5246 −0.6937	0.4623 −0.6784	0.4083 −0.6908	0.4459 −0.6775
0.4909 −1.089	0.5267 −0.6903	0.4710 −0.6789	0.4108 −0.6900	0.4528 −0.6777
0.4951 −1.087	0.5304 −0.6892	0.4731 −0.6794	0.4131 −0.6932	0.4577 −0.6833
0.4994 −1.095	0.5343 −0.6928	0.4756 −0.6817	0.4159 −0.6897	0.4600 −0.6760
0.5023 −1.101	0.5366 −0.6907	0.4777 −0.6799	0.4209 −0.6823	0.4630 −0.6724
0.5055 −1.092	0.5393 −0.6865	0.4803 −0.6854	0.4234 −0.6846	0.4684 −0.6774
0.5085 −1.101	0.5449 −0.6885	0.4824 −0.6739	0.4262 −0.6807	0.4707 −0.6848
0.5112 −1.105	0.5471 −0.6859	0.4853 −0.6791	0.4311 −0.6763	0.4740 −0.6783
0.5132 −1.110	0.5502 −0.6864	0.4874 −0.6882	0.4335 −0.6829	0.4763 −0.6786
0.5165 −1.110	0.5523 −0.6786	0.4901 −0.6754	0.4363 −0.6793	0.4798 −0.6832
0.5192 −1.107	0.5548 −0.6781	0.4923 −0.6834	0.4384 −0.6785	0.4846 −0.6999
0.5218 −1.105	2447360 +	0.4959 −0.6807	0.4410 −0.6848	0.4881 −0.6905
0.5244 −1.103	0.3905 −0.6791	0.5028 −0.6831	0.4433 −0.6873	0.4913 −0.6845
0.5270 −1.101	0.3926 −0.6951	0.5078 −0.6891	0.4463 −0.6865	0.4941 −0.7048
0.5297 −1.098	0.3954 −0.6911	0.5104 −0.6832	0.4508 −0.6887	0.4962 −0.6944
0.5326 −1.101	0.3975 −0.6933	0.5125 −0.6899	0.4561 −0.6853	0.4991 −0.7025
0.5354 −1.095	0.4005 −0.6849	0.5155 −0.6871	0.4616 −0.6942	0.5013 −0.6961
0.5397 −1.085	0.4027 −0.6993	0.5177 −0.6790	0.4655 −0.6875	0.5056 −0.6872
0.5440 −1.087	0.4057 −0.6833	0.5204 −0.6761	0.4689 −0.6877	0.5099 −0.6873
0.5481 −1.087	0.4080 −0.6826	0.5226 −0.6794	0.4711 −0.6803	0.5122 −0.6996
0.5525 −1.088	0.4119 −0.6733	0.5254 −0.6726	0.4741 −0.6790	0.5184 −0.6763
0.5553 −1.096	0.4140 −0.6711	0.5325 −0.6741	0.4767 −0.6848	0.5213 −0.6746
0.5582 −1.094	0.4188 −0.6806	0.5357 −0.6788	0.4795 −0.6843	0.5238 −0.6651
0.5609 −1.096	0.4311 −0.6763	0.5380 −0.6828	0.4818 −0.6876	0.5274 −0.6575
0.5655 −1.100	0.4339 −0.6794	0.5438 −0.6859	0.4845 −0.6904	0.5299 −0.6733

0.5328	-0.6730	0.4348	-0.7872	0.5671	-0.7950	0.3124	-0.6884	0.4270	-0.6932
0.5355	-0.6644	0.4373	-0.8005	0.5700	-0.7898	0.3146	-0.6979	0.4302	-0.6816
0.5384	-0.6812	0.4402	-0.8006	0.5726	-0.7944	0.3165	-0.6941	0.4322	-0.6822
0.5408	-0.6692	0.4429	-0.8054	0.5753	-0.7927	0.3231	-0.6954	0.4347	-0.6840
0.5437	-0.6777	0.4456	-0.8040	0.5778	-0.7982	0.3256	-0.6931	0.4370	-0.6810
0.5461	-0.6957	0.4508	-0.7883	0.5807	-0.8078	0.3277	-0.6903	0.4396	-0.6895
0.5491	-0.6945	0.4561	-0.7950	0.5834	-0.7939	0.3298	-0.6866	0.4420	-0.6898
0.5515	-0.6905	0.4584	-0.7836	0.5868	-0.7958	0.3323	-0.6981	0.4443	-0.6878
0.5548	-0.6987	0.4628	-0.7846	0.5890	-0.7955	0.3348	-0.6936	0.4463	-0.6828
2447424 +		0.4669	-0.8044	0.5915	-0.7970	0.3372	-0.6808	0.4489	-0.6724
0.3084	-0.8030	0.4695	-0.8002	0.5939	-0.7879	0.3395	-0.6831	0.4511	-0.6831
0.3121	-0.7997	0.4725	-0.7963	0.5965	-0.7900	0.3420	-0.6797	0.4533	-0.6804
0.3156	-0.8010	0.4753	-0.7963	0.5991	-0.8015	0.3410	-0.6758	0.4556	-0.6800
0.3190	-0.7962	0.4781	-0.7955	0.6019	-0.8049	0.3465	-0.6831	0.4588	-0.6772
0.3225	-0.7978	0.4806	-0.8030	0.6045	-0.8076	0.3489	-0.6841	0.4616	-0.6872
0.3256	-0.7911	0.4833	-0.8038	0.6075	-0.8107	0.3514	-0.6790	0.4638	-0.7018
0.3284	-0.7862	0.4857	-0.8120	0.6100	-0.8097	0.3539	-0.6796	0.4662	-0.6963
0.3314	-0.7866	0.4883	-0.8094	0.6127	-0.8124	0.3561	-0.6818	0.4689	-0.7221
0.3344	-0.7879	0.4906	-0.8018	0.6152	-0.8018	0.3588	-0.6786	0.4713	-0.7182
0.3429	-0.7957	0.4935	-0.7939	0.6178	-0.8026	0.3612	-0.6856	0.4640	-0.6868
0.3459	-0.7933	0.4958	-0.7877	0.6203	-0.8037	0.3634	-0.6904	0.4805	-0.7021
0.3492	-0.7925	0.4983	-0.7973	0.6228	-0.7967	0.3659	-0.6873	0.4825	-0.7101
0.3525	-0.7935	0.5010	-0.7899	2447450 +		0.3679	-0.6874	0.4848	-0.6968
0.3559	-0.7982	0.5037	-0.8101	0.2545	-0.6824	0.3703	-0.6920	0.4866	-0.6968
0.3588	-0.7932	0.5063	-0.8102	0.2565	-0.6912	0.3725	-0.6911	0.4888	-0.6855
0.3617	-0.8033	0.5092	-0.8097	0.2592	-0.6820	0.3748	-0.6778	0.4908	-0.6960
0.3645	-0.8008	0.5116	-0.7946	0.2615	-0.6845	0.3769	-0.6823	0.4929	-0.6846
0.3678	-0.8011	0.5142	-0.7990	0.2639	-0.6884	0.3791	-0.6803	0.4948	-0.6917
0.3707	-0.7969	0.5169	-0.7973	0.2658	-0.6897	0.3812	-0.6799	0.4971	-0.6931
0.3739	-0.8077	0.5194	-0.8014	0.2679	-0.6899	0.3838	-0.6812	0.4992	-0.6794
0.3766	-0.7961	0.5219	-0.7888	0.2701	-0.6887	0.3861	-0.6794	0.5013	-0.6758
0.3800	-0.8099	0.5246	-0.7919	0.2722	-0.6921	0.3892	-0.6760	0.5035	-0.6897
0.3830	-0.8110	0.5270	-0.7944	0.2765	-0.6922	0.3913	-0.6835	0.5061	-0.7009
0.3864	-0.7950	0.5294	-0.7926	0.2786	-0.6927	0.3934	-0.6774	0.5078	-0.7172
0.3893	-0.8104	0.5318	-0.8064	0.2808	-0.6870	0.3955	-0.6793	0.5104	-0.7226
0.3929	-0.8106	0.5342	-0.8157	0.2828	-0.6812	0.3977	-0.6720	0.5143	-0.7016
0.3977	-0.8139	0.5380	-0.8067	0.2853	-0.6830	0.3997	-0.6803	0.5181	-0.6940
0.4029	-0.8035	0.5415	-0.8040	0.2873	-0.6876	0.4022	-0.6747	0.5260	-0.6803
0.4060	-0.7941	0.5440	-0.8055	0.2897	-0.6917	0.4043	-0.6843	0.5293	-0.6902
0.4097	-0.7910	0.5464	-0.7907	0.2916	-0.6875	0.4066	-0.6891	0.5314	-0.7025
0.4123	-0.7966	0.5489	-0.8137	0.2939	-0.6878	0.4113	-0.7016	0.5339	-0.6919
0.4155	-0.8107	0.5513	-0.7916	0.2959	-0.6885	0.4134	-0.7021	0.5371	-0.7072
0.4182	-0.8153	0.5542	-0.7999	0.2980	-0.6917	0.4157	-0.6975	2447451 +	
0.4215	-0.8297	0.5565	-0.8084	0.2999	-0.6925	0.4179	-0.6918	0.3476	-0.6871
0.4247	-0.8125	0.5590	-0.7846	0.3064	-0.6902	0.4204	-0.6830	0.3501	-0.6806
0.4272	-0.8153	0.5612	-0.7912	0.3084	-0.6864	0.4224	-0.6856	0.3523	-0.6864
0.4309	-0.7910	0.5646	-0.7895	0.3104	-0.6876	0.4248	-0.6967	0.3548	-0.6868

0.3567	-0.6881	0.3829	-0.6907	0.4066	-0.6760	0.4300	-0.6781	0.4637	-0.6921
0.3589	-0.6774	0.3853	-0.6857	0.4088	-0.6809	0.4325	-0.6807	0.4661	-0.6906
0.3609	-0.6862	0.3876	-0.6854	0.4108	-0.6969	0.4355	-0.6861	0.4681	-0.6871
0.3634	-0.6791	0.3899	-0.6917	0.4128	-0.6942	0.4388	-0.6756	0.4705	-0.6895
0.3658	-0.6833	0.3920	-0.6814	0.4150	-0.6880	0.4424	-0.6834	0.4732	-0.6848
0.3682	-0.6800	0.3941	-0.6833	0.4168	-0.6856	0.4456	-0.6789	0.4754	-0.6988
0.3700	-0.6748	0.3961	-0.6796	0.4191	-0.6905	0.4490	-0.6691	0.4777	-0.6966
0.3720	-0.6912	0.3982	-0.6781	0.4215	-0.6840	0.4512	-0.6707	0.4799	-0.6914
0.3741	-0.6757	0.4004	-0.6916	0.4238	-0.6907	0.4533	-0.6880	0.4823	-0.7016
0.3762	-0.6892	0.4026	-0.6853	0.4259	-0.6911	0.4558	-0.6765		
0.3808	-0.6889	0.4044	-0.6756	0.4282	-0.6809	0.4612	-0.6853		

The archived files are: ecep-c.Varch, ecep-c.Barch and ecep-c.Uarch. Despite the structure of Table 97 and Table 98, the archived files contain the whole V , B and U observations, separately. If somebody is interested in the extreme behaviour of ϵ Cep on the space data, these early observations extend the timebase and give the possibility for stability investigation.

DATA OF OTHER STARS

Although I was mainly interested in the non-radial pulsation of δ Scuti stars, over the years I was working on a variety of other types of non-radially pulsating stars. In my active era many non-radially pulsating type of variable stars were discovered, pulsating in p- or g-modes or both. I did not initiate any campaign or coordinated observations on these types of stars, but I always joined any joint observation if I was invited. As you will see, I got many invitation for different types of stars, from different parts of the world. Of course, it means that only short runs are presented in these sessions, except a white dwarf, which was a Hungarian achievement for educational purposes. The sample of stars contains even stars with radial pulsation or binary nature.

Be, λ Boo, β Cep, RR Lyr, WD, γ Dor, W UMa

The list of the stars including in the second part is summarized here. With these types not only the main sequence of the Hertzsprung-Russell diagram (Be, λ Boo, β Cep, γ Dor) is covered, but other part of the diagram is concerned (RR Lyr, WD, W UMa).

25 Cyg

I was invited to join a coordinated observation of 25 Cyg, a Be star, by John Percy (University of Toronto, Canada) in 1990. As it was written in Percy et al. (1988) paper 25 Cyg was suspected to show very small (0.01 mag) variations on a time scale of hours. The low-amplitude and short-term (0.2 day) variability is very common in Be stars. Many observers believed that this is due to non-radial pulsation, although a few believed that it is due to rotation. However, a period of 0.2 day is too short to be a rotation period, even if the light curve were actually a double-wave curve with a period of $2 \times 0.2 = 0.4$ day.

The aim of the coordinated observation was to confirm or to reject the variability of 25 Cyg. Due to the very low amplitude, the quality of the sky, the precision of the observation and the reduction procedure were very important. Observations in B and V colours were suggested to be sufficient. Beside 25 Cyg ($V=5.19$, $B-V=-0.17$) 22 Cyg ($V=4.94$, $B-V=-0.08$) was observed as a comparison star and 36 Cyg ($V=5.58$, $B-V=+0.06$) as a check star. The Hungarian observations were obtained in Johnson V and B colours in August 1992. Observations were obtained on many nights but the quality of the sky was more or less acceptable only for August 2/3 and 3/4, 1992. The observations were corrected for extinction. The extinction coefficients were 0.24 for both nights in V and 0.325 and 0.4 in B . The instrumental system was transformed into international system, using the following telescope constant: $\epsilon = -0.172$ $\nu = 1.264$ $\psi = 1.039$. Relative V and B values were derived for 25 Cyg – 22 Cyg, 25 Cyg – 36 Cyg and 22 Cyg – 36 Cyg for JD 2448837 (Aug 2/3 1992) and JD 2448838 (Aug 3/4 1992) nights. The V light curves are shown in Figure 70 and the B light curves in Figure 71.

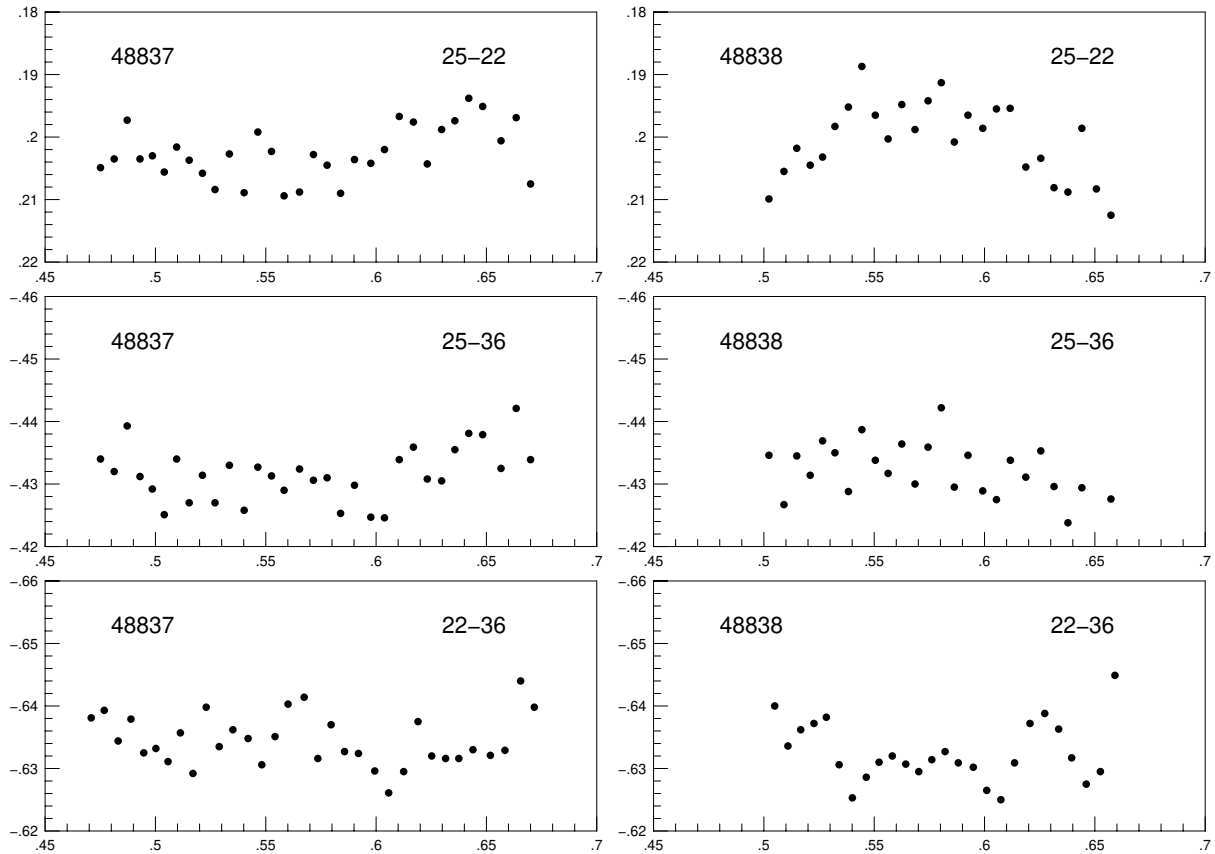


Figure 70: Differential light curves of 25 Cyg, 22 Cyg and 36 Cyg relative to each other in V colour

Both figures have the same structure. The JD 2448837 are on the left side, while the JD 2448838 are on the right side. The upper panels give the relative values for 25 Cyg – 22 Cyg, the middle panels for 25 Cyg – 36 Cyg and the lower panels for 22 Cyg – 36 Cyg. The labels in the panels help the identification. Although there are some trends, especially on the light curve of 25 Cyg - 22 Cyg, both in V and B , but due to the large

scatter, it is not convincing. Probably, it happened with the other observing runs in the coordinated observations, since this coordinated campaign data were not published. The Johnson V data are given in Table 99, 100 and 101 for 25 Cyg – 22 Cyg, 25 Cyg – 36 Cyg and 22 Cyg – 36 Cyg, respectively.

Table 99. The differential data for 25 Cyg – 22 Cyg in V colour

25 Cyg - 22 Cyg	0.5335 0.2027	0.6169 0.1976	0.5210 0.2045	0.5992 0.1986
V colour	0.5402 0.2089	0.6232 0.2043	0.5266 0.2032	0.6054 0.1955
2448837 +	0.5464 0.1992	0.6297 0.1988	0.5322 0.1983	0.6116 0.1954
0.4751 0.2049	0.5526 0.2023	0.6357 0.1974	0.5383 0.1952	0.6187 0.2048
0.4813 0.2035	0.5583 0.2094	0.6420 0.1938	0.5444 0.1887	0.6255 0.2034
0.4872 0.1973	0.5653 0.2088	0.6483 0.1951	0.5505 0.1965	0.6315 0.2081
0.4930 0.2035	0.5716 0.2028	0.6566 0.2006	0.5563 0.2003	0.6378 0.2088
0.4986 0.2030	0.5778 0.2045	0.6635 0.1969	0.5625 0.1948	0.6441 0.1986
0.5040 0.2056	0.5839 0.2090	0.6700 0.2075	0.5685 0.1988	0.6507 0.2083
0.5096 0.2016	0.5902 0.2036	2448838 +	0.5744 0.1942	0.6573 0.2125
0.5153 0.2037	0.5976 0.2042	0.5023 0.2099	0.5804 0.1913	
0.5213 0.2058	0.6038 0.2020	0.5091 0.2055	0.5863 0.2008	
0.5270 0.2084	0.6105 0.1967	0.5149 0.2018	0.5925 0.1965	

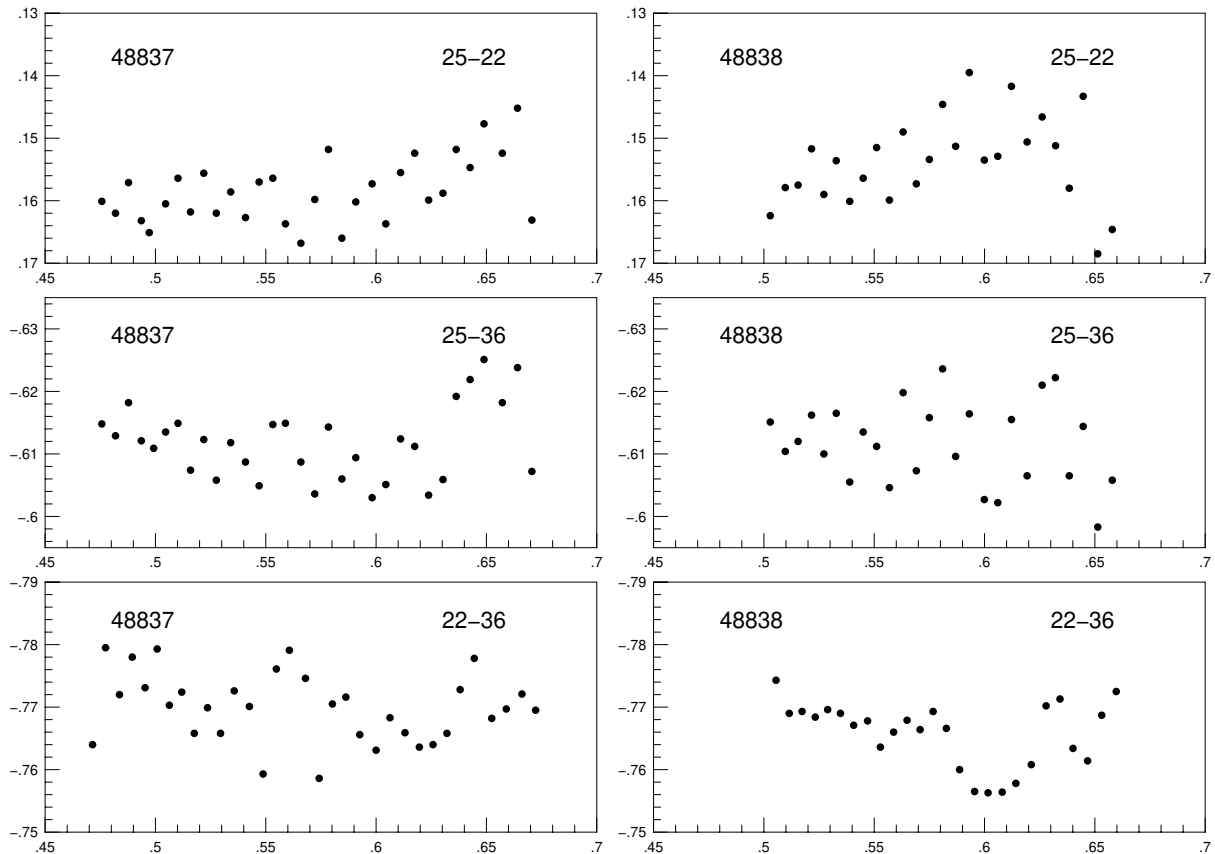


Figure 71: Differential light curves of 25 Cyg, 22 Cyg and 36 Cyg relative to each other in B colour

Table 100. The differential data for 25 Cyg – 36 Cyg in V colour

25 Cyg - 36 Cyg	0.5335 -0.4330	0.6169 -0.4359	0.5210 -0.4314	0.5992 -0.4289
V colour	0.5402 -0.4258	0.6232 -0.4308	0.5266 -0.4369	0.6054 -0.4275
2448837 +	0.5464 -0.4327	0.6297 -0.4305	0.5322 -0.4350	0.6117 -0.4338
0.4751 -0.4340	0.5526 -0.4313	0.6357 -0.4355	0.5383 -0.4288	0.6187 -0.4311
0.4813 -0.4320	0.5583 -0.4290	0.6420 -0.4381	0.5444 -0.4387	0.6255 -0.4353
0.4872 -0.4393	0.5653 -0.4324	0.6483 -0.4379	0.5505 -0.4338	0.6315 -0.4296
0.4930 -0.4312	0.5716 -0.4306	0.6566 -0.4325	0.5563 -0.4317	0.6378 -0.4238
0.4986 -0.4292	0.5778 -0.4310	0.6635 -0.4421	0.5625 -0.4364	0.6441 -0.4294
0.5040 -0.4251	0.5839 -0.4253	0.6700 -0.4339	0.5685 -0.4300	0.6507 -0.4165
0.5096 -0.4340	0.5902 -0.4298	2448838 +	0.5744 -0.4359	0.6573 -0.4276
0.5153 -0.4270	0.5976 -0.4247	0.5023 -0.4346	0.5804 -0.4422	
0.5213 -0.4314	0.6038 -0.4246	0.5091 -0.4267	0.5863 -0.4295	
0.5270 -0.4270	0.6105 -0.4339	0.5149 -0.4345	0.5925 -0.4346	

Table 101. The differential data for 22 Cyg – 36 Cyg in V colour

22 Cyg - 36 Cyg	0.5289 -0.6335	0.6125 -0.6295	0.5167 -0.6362	0.5949 -0.6302
V colour	0.5351 -0.6362	0.6190 -0.6375	0.5227 -0.6372	0.6010 -0.6265
2448837 +	0.5420 -0.6348	0.6252 -0.6320	0.5283 -0.6382	0.6074 -0.6250
0.4709 -0.6381	0.5482 -0.6306	0.6315 -0.6316	0.5341 -0.6306	0.6136 -0.6309
0.4768 -0.6393	0.5542 -0.6351	0.6375 -0.6316	0.5401 -0.6253	0.6206 -0.6372
0.4831 -0.6344	0.5601 -0.6403	0.6439 -0.6330	0.5464 -0.6286	0.6273 -0.6388
0.4889 -0.6379	0.5674 -0.6414	0.6518 -0.6321	0.5522 -0.6310	0.6336 -0.6363
0.4947 -0.6325	0.5736 -0.6316	0.6584 -0.6329	0.5582 -0.6320	0.6395 -0.6317
0.5002 -0.6332	0.5796 -0.6370	0.6655 -0.6440	0.5643 -0.6307	0.6461 -0.6275
0.5057 -0.6311	0.5857 -0.6327	0.6717 -0.6398	0.5702 -0.6295	0.6525 -0.6295
0.5113 -0.6357	0.5920 -0.6324	2448838 +	0.5761 -0.6314	0.6591 -0.6449
0.5170 -0.6292	0.5994 -0.6296	0.5049 -0.6400	0.5821 -0.6327	
0.5230 -0.6398	0.6057 -0.6261	0.5109 -0.6336	0.5881 -0.6309	

The data in Johnson B colour are given in Table 102, 103 and 104 for 25 Cyg – 22 Cyg, 25 Cyg – 36 Cyg and 22 Cyg – 36 Cyg, respectively.

Table 102. The differential data for 25 Cyg – 22 Cyg in B colour

25 Cyg - 22 Cyg	0.5102 0.1564	0.5659 0.1668	0.6238 0.1599	0.5029 0.1624
B colour	0.5159 0.1618	0.5722 0.1598	0.6303 0.1588	0.5097 0.1579
2448837 +	0.5219 0.1556	0.5784 0.1518	0.6363 0.1518	0.5155 0.1575
0.4757 0.1601	0.5276 0.1620	0.5845 0.1660	0.6426 0.1547	0.5216 0.1517
0.4819 0.1620	0.5341 0.1586	0.5908 0.1602	0.6489 0.1477	0.5272 0.1590
0.4878 0.1571	0.5408 0.1627	0.5982 0.1573	0.6572 0.1524	0.5328 0.1536
0.4936 0.1632	0.5470 0.1570	0.6044 0.1637	0.6641 0.1452	0.5389 0.1601
0.4972 0.1651	0.5532 0.1564	0.6111 0.1555	0.6706 0.1631	0.5450 0.1564
0.5046 0.1605	0.5589 0.1637	0.6175 0.1524	2448838 +	0.5511 0.1515

0.5569 0.1599	0.5810 0.1446	0.6060 0.1529	0.6322 0.1512	0.6579 0.1646
0.5631 0.1490	0.5869 0.1513	0.6122 0.1417	0.6384 0.1580	
0.5691 0.1573	0.5931 0.1395	0.6193 0.1506	0.6447 0.1433	
0.5750 0.1534	0.5999 0.1535	0.6261 0.1466	0.6513 0.1685	

Table 103. The differential data for 25 Cyg – 36 Cyg in B colour

25 Cyg - 36 Cyg	0.5341 -0.6118	0.6175 -0.6112	0.5216 -0.6162	0.5999 -0.6027
B colour	0.5408 -0.6087	0.6238 -0.6034	0.5272 -0.6100	0.6060 -0.6022
2448837 +	0.5470 -0.6049	0.6303 -0.6059	0.5328 -0.6165	0.6122 -0.6155
0.4757 -0.6148	0.5532 -0.6147	0.6363 -0.6192	0.5389 -0.6055	0.6193 -0.6065
0.4819 -0.6129	0.5589 -0.6149	0.6426 -0.6219	0.5450 -0.6135	0.6261 -0.6210
0.4878 -0.6182	0.5659 -0.6087	0.6489 -0.6251	0.5511 -0.6112	0.6321 -0.6222
0.4936 -0.6121	0.5722 -0.6036	0.6572 -0.6182	0.5569 -0.6046	0.6384 -0.6065
0.4992 -0.6109	0.5784 -0.6143	0.6641 -0.6238	0.5631 -0.6198	0.6447 -0.6144
0.5046 -0.6135	0.5845 -0.6060	0.6706 -0.6072	0.5691 -0.6073	0.6513 -0.5983
0.5102 -0.6149	0.5908 -0.6094	2448838 +	0.5750 -0.6158	0.6579 -0.6058
0.5159 -0.6074	0.5982 -0.6030	0.5029 -0.6151	0.5810 -0.6236	
0.5219 -0.6123	0.6044 -0.6051	0.5097 -0.6104	0.5869 -0.6096	
0.5276 -0.6058	0.6111 -0.6124	0.5155 -0.6120	0.5931 -0.6164	

Table 104. The differential data for 22 Cyg – 36 Cyg in B colour

22 Cyg - 36 Cyg	0.5295 -0.7658	0.6131 -0.7659	0.5173 -0.7693	0.5955 -0.7565
B colour	0.5357 -0.7726	0.6196 -0.7636	0.5233 -0.7684	0.6016 -0.7563
2448837 +	0.5426 -0.7701	0.6258 -0.7640	0.5289 -0.7696	0.6080 -0.7564
0.4715 -0.7640	0.5488 -0.7593	0.6321 -0.7658	0.5347 -0.7690	0.6142 -0.7578
0.4774 -0.7795	0.5548 -0.7761	0.6381 -0.7728	0.5407 -0.7671	0.6212 -0.7608
0.4837 -0.7720	0.5607 -0.7791	0.6445 -0.7778	0.5470 -0.7678	0.6279 -0.7702
0.4895 -0.7780	0.5680 -0.7746	0.6524 -0.7682	0.5528 -0.7636	0.6342 -0.7713
0.4953 -0.7731	0.5742 -0.7586	0.6590 -0.7697	0.5588 -0.7660	0.6401 -0.7634
0.5008 -0.7793	0.5802 -0.7705	0.6661 -0.7721	0.5649 -0.7679	0.6467 -0.7614
0.5063 -0.7703	0.5863 -0.7716	0.6723 -0.7695	0.5708 -0.7664	0.6531 -0.7687
0.5119 -0.7724	0.5926 -0.7656	2448838 +	0.5767 -0.7693	0.6597 -0.7725
0.5176 -0.7658	0.6000 -0.7631	0.5055 -0.7743	0.5827 -0.7666	
0.5236 -0.7699	0.6063 -0.7683	0.5115 -0.7690	0.5887 -0.7600	

After many years the status of 25 Cyg was still doubtful. According to Percy et al. (1997), 25 Cyg may show long-term variations of up to 0.05 in V and B . In the paper of Percy et al. (2002) the 25 Cyg was still listed in its Table 2 as a suspected Be variable with $P=0.21$. In the Catalogue of Beta Cephei stars by Stankov and Handler (2005), 25 Cyg was mentioned as a poor and rejected Beta Cephei candidate. In the following years 25 Cyg was not treated as an independent star for variability. The search in ADS for 25 Cyg bring up papers based on data of TESS, BRITE and ALMA, but it was always treated as member of a group of stars. Maybe a possible low-amplitude variability could be checked by the precise space-born datasets, like TESS, Kepler or CoRoT. The archived files are: 25cyg–22cyg.arch in V and B (Tables 99 and 102), 25cyg–36cyg.arch (Tables 100 and 103), 22cyg–36cyg.arch (Tables 101 and 104).

29 Cyg

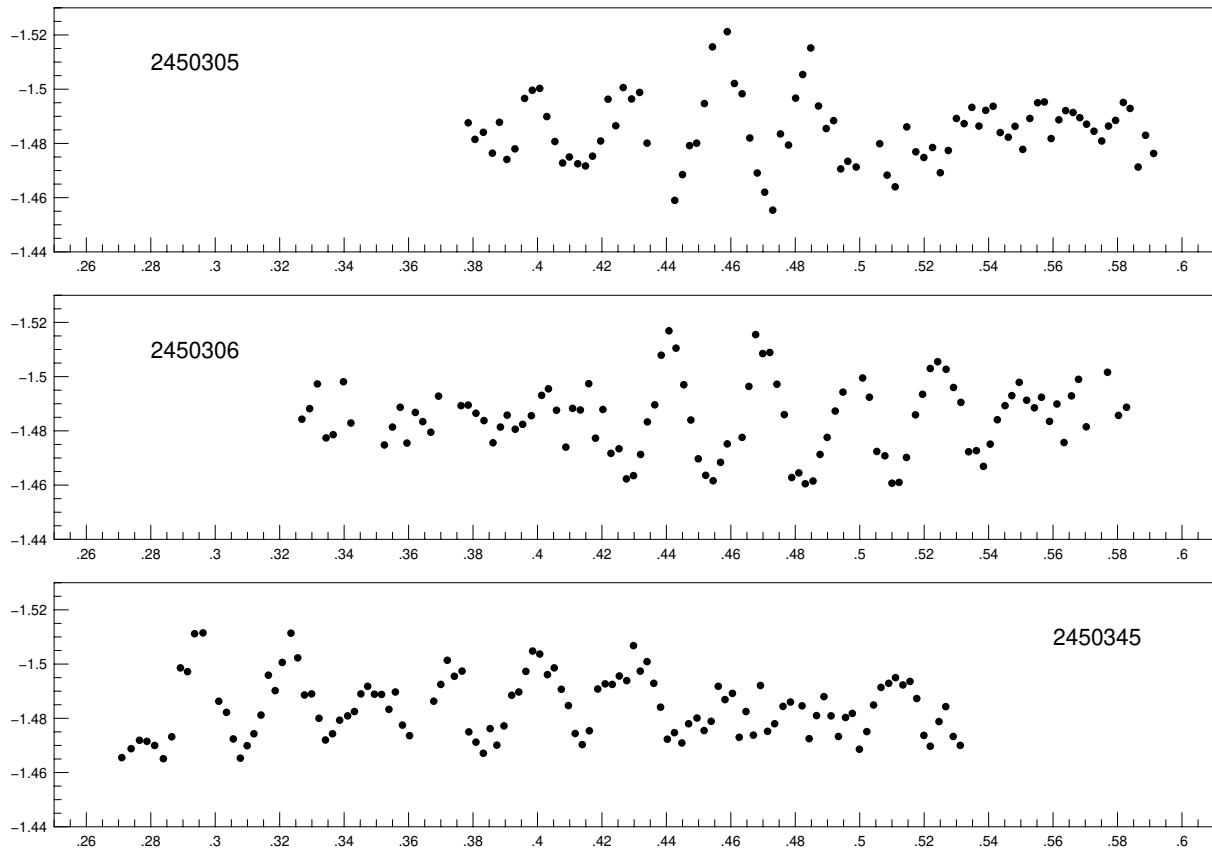
λ Boo-type stars were separated from the group of δ Scuti stars. 29 Cyg was the first among λ Boo-type stars for which definite evidence of pulsation was found in 1977. Following more observations, an international multisite photometric and spectroscopic campaign was organized by D. Mkrtichian (Ukraine) for 29 Cyg in 1996, where I was also invited. The observations were obtained in Ukraine, Russia, Hungary, Turkey, Canada and USA. A short note concentrating for the frequencies were published in Mkrtichian et al. (1998). The main results of the campaigns between 1995-1998 were published in Mkrtichian et al. (2000). Well-defined multiperiodicity, long-term and short-term variability of amplitudes for all of these modes were proved. This was done for the first time for a λ Boo star. The photometric behavior of 29 Cyg is similar to the pulsational characteristics of δ Scuti stars. The more detailed analysis based on the campaigns, included the campaign in 1996, too, was published in Mkrtichian et al. (2007). The log of the 1996 photometric observations is given in Table 6 of that paper. Three observing runs are labeled by my name and the three light curves are shown in Figure 4. marked by open circles. On the date of two runs, parallel observations were also obtained at other sites. The overlap proves the quality of the Hungarian observations.

I present here the Hungarian observation obtained at Piskéstető for the international campaign. The comparison was HD 192538. Observations were carried out on Aug 9/10 (JD 2450305), Aug 10/11 (JD 2450306) and Sept 18/19 (JD 2450345). The data were corrected for light-time effect and extinction: $k=0.22, 0.25$ and 0.25 coefficients were used for the nights. Observations were obtained in Johnson V filter with a single channel uncooled photometer. The light curves are shown in Figure 72.

The amplitude of the light variation is rather large, maximum 0.08 mag. The size of the amplitude is changing from cycle to cycle. The possible explanation is the interaction of the closely spaced frequencies, or unusual single cycles that I localized in light variation of more δ Scuti or white dwarf variables. Presumably an additional physical process is superimposed on the pulsation. The Hungarian data are listed in Table 105.

Table 105. The differential data for 29 Cyg – HD 192538 in V colour

29 Cyg - HD	0.4078 –1.4728	0.4494 –1.4801	0.4848 –1.5152	0.5275 –1.4774
192538	0.4099 –1.4750	0.4518 –1.4947	0.4872 –1.4938	0.5300 –1.4892
2450305 +	0.4125 –1.4725	0.4543 –1.5156	0.4896 –1.4855	0.5324 –1.4873
0.3785 –1.4876	0.4149 –1.4717	0.4566 –1.5382	0.4919 –1.4884	0.5348 –1.4933
0.3806 –1.4815	0.4171 –1.4753	0.4589 –1.5212	0.4941 –1.4706	0.5370 –1.4864
0.3832 –1.4841	0.4196 –1.4809	0.4611 –1.5021	0.4963 –1.4734	0.5391 –1.4922
0.3860 –1.4764	0.4219 –1.4963	0.4635 –1.4983	0.4989 –1.4713	0.5414 –1.4937
0.3882 –1.4878	0.4243 –1.4865	0.4659 –1.4820	0.5062 –1.4799	0.5436 –1.4840
0.3905 –1.4741	0.4266 –1.5006	0.4682 –1.4691	0.5085 –1.4683	0.5461 –1.4823
0.3930 –1.4780	0.4292 –1.4964	0.4705 –1.4620	0.5110 –1.4640	0.5482 –1.4863
0.3960 –1.4966	0.4317 –1.4988	0.4730 –1.4554	0.5146 –1.4861	0.5506 –1.4778
0.3984 –1.4996	0.4340 –1.4801	0.4754 –1.4835	0.5174 –1.4769	0.5528 –1.4892
0.4007 –1.5003	0.4426 –1.4590	0.4779 –1.4794	0.5199 –1.4748	0.5552 –1.4950
0.4029 –1.4899	0.4450 –1.4685	0.4801 –1.4967	0.5226 –1.4785	0.5573 –1.4953
0.4054 –1.4807	0.4472 –1.4792	0.4823 –1.5054	0.5250 –1.4692	0.5594 –1.4818

Figure 72: Differential light curves of 29 Cyg – HD 192538 in V colour

0.5618	-1.4887	0.3398	-1.4981	0.4013	-1.4931	0.4476	-1.4840	0.4948	-1.4943
0.5639	-1.4921	0.3421	-1.4829	0.4034	-1.4955	0.4499	-1.4697	0.5009	-1.4995
0.5662	-1.4914	0.3525	-1.4748	0.4059	-1.4876	0.4522	-1.4636	0.5030	-1.4924
0.5683	-1.4895	0.3550	-1.4814	0.4088	-1.4740	0.4545	-1.4616	0.5053	-1.4724
0.5704	-1.4871	0.3574	-1.4887	0.4109	-1.4883	0.4568	-1.4684	0.5078	-1.4708
0.5727	-1.4845	0.3595	-1.4755	0.4133	-1.4877	0.4589	-1.4752	0.5100	-1.4607
0.5751	-1.4809	0.3621	-1.4868	0.4159	-1.4974	0.4635	-1.4776	0.5122	-1.4610
0.5772	-1.4864	0.3644	-1.4834	0.4180	-1.4773	0.4656	-1.4964	0.5145	-1.4702
0.5794	-1.4885	0.3669	-1.4795	0.4203	-1.4879	0.4677	-1.5155	0.5173	-1.4859
0.5818	-1.4951	0.3693	-1.4928	0.4228	-1.4717	0.4699	-1.5085	0.5195	-1.4935
0.5839	-1.4929	0.3763	-1.4893	0.4253	-1.4734	0.4721	-1.5089	0.5219	-1.5030
0.5864	-1.4713	0.3785	-1.4895	0.4276	-1.4623	0.4743	-1.4972	0.5242	-1.5055
0.5887	-1.4830	0.3809	-1.4865	0.4298	-1.4635	0.4766	-1.4860	0.5268	-1.5027
0.5912	-1.4763	0.3834	-1.4838	0.4320	-1.4713	0.4789	-1.4628	0.5291	-1.4960
2450306 +		0.3862	-1.4756	0.4341	-1.4833	0.4811	-1.4645	0.5314	-1.4905
0.3269	-1.4843	0.3885	-1.4814	0.4364	-1.4896	0.4831	-1.4605	0.5338	-1.4723
0.3293	-1.4882	0.3906	-1.4858	0.4384	-1.5079	0.4855	-1.4615	0.5362	-1.4727
0.3317	-1.4973	0.3931	-1.4806	0.4408	-1.5169	0.4877	-1.4713	0.5384	-1.4669
0.3344	-1.4774	0.3954	-1.4824	0.4430	-1.5105	0.4899	-1.4776	0.5405	-1.4751
0.3366	-1.4786	0.3981	-1.4856	0.4454	-1.4970	0.4924	-1.4998	0.5427	-1.4841

0.5451	-1.4893	0.2962	-1.5115	0.3559	-1.4897	0.4187	-1.4908	0.4762	-1.4844
0.5472	-1.4930	0.3011	-1.4863	0.3581	-1.4775	0.4210	-1.4927	0.4785	-1.4860
0.5495	-1.4979	0.3035	-1.4822	0.3603	-1.4736	0.4232	-1.4925	0.4821	-1.4846
0.5518	-1.4913	0.3056	-1.4724	0.3678	-1.4863	0.4254	-1.4956	0.4843	-1.4725
0.5542	-1.4885	0.3078	-1.4653	0.3700	-1.4925	0.4277	-1.4939	0.4866	-1.4810
0.5564	-1.4924	0.3099	-1.4699	0.3720	-1.5014	0.4298	-1.5068	0.4889	-1.4880
0.5589	-1.4835	0.3120	-1.4743	0.3742	-1.4955	0.4319	-1.4974	0.4911	-1.4809
0.5612	-1.4899	0.3142	-1.4812	0.3766	-1.4974	0.4340	-1.5009	0.4934	-1.4733
0.5634	-1.4757	0.3165	-1.4959	0.3787	-1.4750	0.4361	-1.4929	0.4956	-1.4803
0.5657	-1.4929	0.3186	-1.4902	0.3809	-1.4712	0.4382	-1.4841	0.4977	-1.4818
0.5679	-1.4990	0.3208	-1.5006	0.3832	-1.4671	0.4403	-1.4723	0.4999	-1.4686
0.5703	-1.4815	0.3235	-1.5114	0.3853	-1.4762	0.4425	-1.4747	0.5022	-1.4751
0.5769	-1.5016	0.3256	-1.5023	0.3874	-1.4701	0.4448	-1.4709	0.5043	-1.4849
0.5803	-1.4857	0.3277	-1.4886	0.3896	-1.4772	0.4469	-1.4780	0.5066	-1.4914
0.5828	-1.4887	0.3299	-1.4890	0.3920	-1.4885	0.4495	-1.4801	0.5090	-1.4929
2450345 +		0.3322	-1.4800	0.3942	-1.4897	0.4517	-1.4755	0.5111	-1.4950
0.2710	-1.4655	0.3342	-1.4720	0.3964	-1.4973	0.4539	-1.4789	0.5134	-1.4923
0.2739	-1.4688	0.3364	-1.4743	0.3985	-1.5048	0.4561	-1.4918	0.5156	-1.4936
0.2765	-1.4719	0.3386	-1.4793	0.4007	-1.5037	0.4582	-1.4869	0.5177	-1.4873
0.2788	-1.4715	0.3411	-1.4809	0.4031	-1.4961	0.4605	-1.5013	0.5199	-1.4737
0.2812	-1.4700	0.3432	-1.4825	0.4052	-1.4986	0.4626	-1.4730	0.5219	-1.4697
0.2839	-1.4651	0.3452	-1.4890	0.4074	-1.4907	0.4647	-1.4825	0.5246	-1.4788
0.2865	-1.4732	0.3473	-1.4918	0.4096	-1.4847	0.4670	-1.4738	0.5267	-1.4843
0.2892	-1.4986	0.3494	-1.4889	0.4117	-1.4744	0.4692	-1.4921	0.5290	-1.4733
0.2914	-1.4772	0.3516	-1.4888	0.4139	-1.4703	0.4714	-1.4752	0.5312	-1.4700
0.2936	-1.5112	0.3539	-1.4833	0.4161	-1.4754	0.4736	-1.4780		

I am sure that some of the space missions have been observed this very special star. The data are submitted to the archive as 29cyg-HD192538.arch.

ν and μ Eridani

I joined a multisite campaign in 2002 organized by Gerald Handler for ν Eridani = HR 1463, a β Cephei star. Two comparison stars were suggested, the μ Eri = HR 1520 and ξ Eri = HR 1386. Finally it turned out that μ Eri shows also light variability, actually it is a SPB star. The observation was not a simple one. The stars were too bright, so we had to use neutral filter for the 1m telescope at Piszkestető. Additionally, we made standardisation measuring 11 standard stars. Our near 12 hours observation was part of a 600 hours multisite observation. Even the reduction was done centrally, handling the multisite data homogenously. The paper was published by Handler et al. (2004). Up to now the campaign data were not submitted to any public domain, so I got a permission from Gerald Handler to include the Hungarian observations into this publication. Sooner or later he will publish all the data of the international campaign. We did not have excellent weather conditions but finally we got some useful data for the campaign. The log of Hungarian observations is given in Table 106. In Januar 2003 we observed on 4 consecutive nights, but not as long as is normal for a winter night, and due to the complex

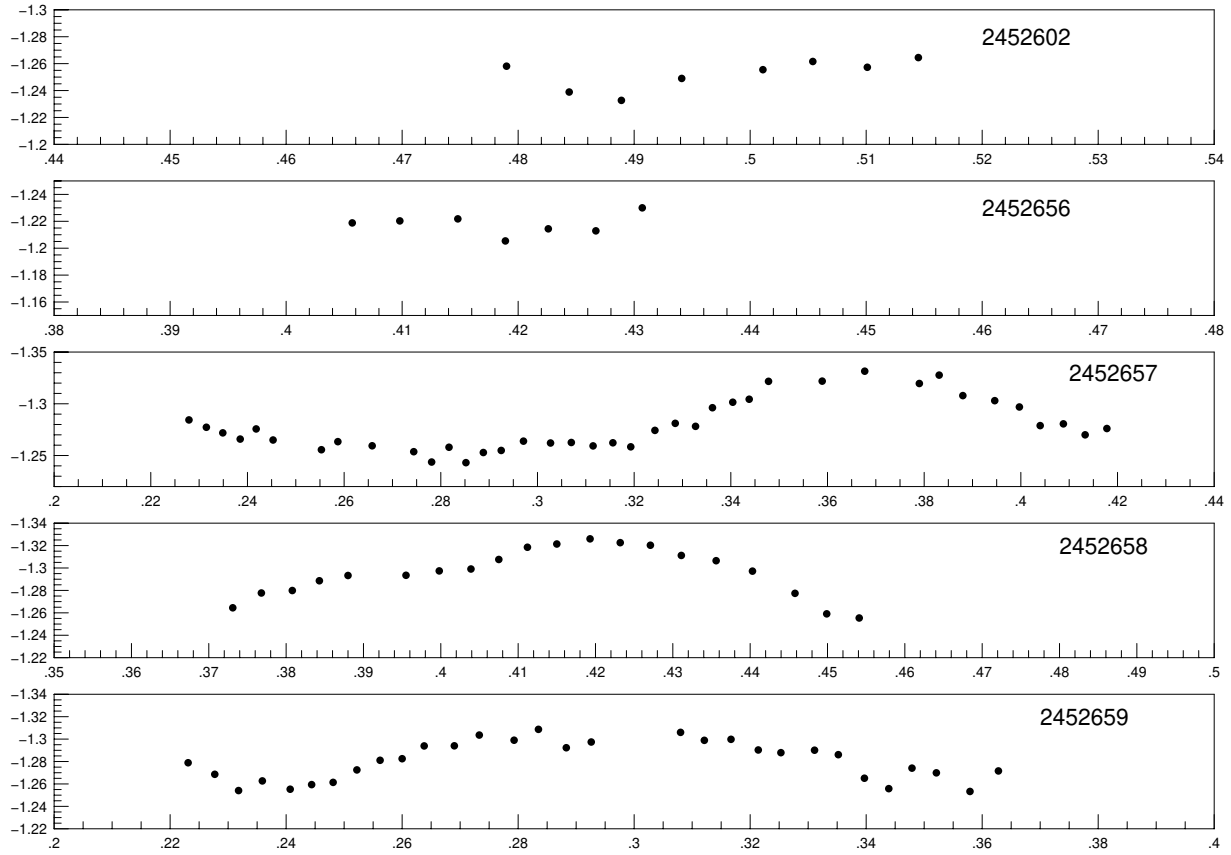
Table 106. Journal of the observation of ν and μ Eri

Date (UT)	HJD 2400000+	Length (hour)	Number	Observers
Nov 23/24 2002	52602	0.744	6	MP, GV
Jan 16/17 2003	52656	0.7224	7	MP, GV
Jan 17/18 2003	52657	4.6248	36	MP, GV
Jan 18/19 2003	52658	1.9488	18	MP, GV
Jan 19/20 2003	52659	3.3552	26	MP, GV
Total		11.3952	93	

task the number of observations is less than usual. Last coloumn gives the observers. Géza Virághalmi and my PhD student, Dávid Zsuffa contributed to the observation. Due to a misunderstanding the name of Géza Virághalmi was omitted from the list of co-authors, although he joined the observation on most of the nights. Finally, the night where D. Zsuffa was the co-observer were not included into the campaign data. I will correct this mistake in the archived data files. The data of ν Eri is given in Table 107 while data on μ Eri is given in Table 108. The light curves of ν and μ Eri are shown in Figure 73 or Figure 74, respectively. The light variation of ν Eri is around 0.1 mag, while the μ Eri shows much less light amplitude.

Table 107. The differential data for ν Eri – ξ Eri in V colour

2452602 +	.2349 –1.2719	.3285 –1.2811	.3808 –1.2799	.2277 –1.2686
.4790 –1.2581	.2385 –1.2659	.3327 –1.2782	.3843 –1.2886	.2318 –1.2541
.4844 –1.2389	.2418 –1.2757	.3362 –1.2962	.3880 –1.2933	.2359 –1.2627
.4889 –1.2327	.2453 –1.2650	.3404 –1.3015	.3955 –1.2935	.2407 –1.2553
.4941 –1.2490	.2553 –1.2556	.3438 –1.3044	.3998 –1.2974	.2444 –1.2594
.5011 –1.2555	.2587 –1.2634	.3478 –1.3217	.4039 –1.2991	.2481 –1.2614
.5054 –1.2616	.2658 –1.2594	.3589 –1.3219	.4075 –1.3076	.2522 –1.2725
.5101 –1.2573	.2744 –1.2537	.3677 –1.3315	.4112 –1.3185	.2562 –1.2811
.5145 –1.2645	.2781 –1.2437	.3790 –1.3196	.4150 –1.3214	.2600 –1.2825
2452656 +	.2817 –1.2580	.3831 –1.3277	.4193 –1.3260	.2638 –1.2939
.4057 –1.2188	.2852 –1.2431	.3880 –1.3079	.4232 –1.3226	.2690 –1.2940
.4098 –1.2203	.2888 –1.2529	.3946 –1.3030	.4271 –1.3203	.2733 –1.3036
.4148 –1.2218	.2925 –1.2549	.3997 –1.2969	.4311 –1.3112	.2793 –1.2990
.4189 –1.2054	.2971 –1.2639	.4040 –1.2789	.4356 –1.3065	.2835 –1.3087
.4226 –1.2144	.3027 –1.2621	.4088 –1.2806	.4403 –1.2972	.2883 –1.2923
.4267 –1.2129	.3070 –1.2626	.4133 –1.2700	.4458 –1.2774	.2926 –1.2974
.4307 –1.2300	.3115 –1.2593	.4178 –1.2761	.4499 –1.2591	.3080 –1.3060
2452657 +	.3156 –1.2623	2452658 +	.4541 –1.2554	.3121 –1.2989
.2279 –1.2844	.3193 –1.2584	.3731 –1.2645	2452659 +	.3167 –1.2998
.2315 –1.2773	.3243 –1.2743	.3768 –1.2777	.2231 –1.2789	.3214 –1.2903

Figure 73: Differential light curves of ν Eri – ξ Eri in V colour

.3253 –1.2879	.3352 –1.2861	.3439 –1.2558	.3521 –1.2699	.3628 –1.2716
.3311 –1.2901	.3397 –1.2651	.3479 –1.2741	.3579 –1.2533	

Table 108. The differential data for μ Eri – ξ Eri in V colour

2452602 +	2452657 +	.3038 –1.2020	.3800 –1.1912	.4007 –1.1820
.4801 –1.1925	.2217 –1.2089	.3125 –1.1980	.3848 –1.1989	.4048 –1.1851
.4855 –1.2024	.2288 –1.1947	.3166 –1.1925	.3965 –1.1753	.4084 –1.1747
.4899 –1.1980	.2324 –1.1960	.3208 –1.1906	.4011 –1.1825	.4122 –1.1758
.4953 –1.1924	.2359 –1.1841	.3255 –1.1910	.4051 –1.1713	.4160 –1.1736
.5022 –1.2008	.2393 –1.1968	.3295 –1.1838	.4097 –1.1776	.4202 –1.1872
.5111 –1.1880	.2427 –1.2036	.3336 –1.1799	.4144 –1.1830	.4243 –1.1885
2452656 +	.2595 –1.2049	.3378 –1.1795	2452658 +	.4281 –1.1848
.4067 –1.1728	.2631 –1.2194	.3414 –1.1716	.3741 –1.1901	.4366 –1.1806
.4116 –1.1684	.2753 –1.1951	.3448 –1.1718	.3776 –1.1887	.4468 –1.1771
.4158 –1.1778	.2790 –1.2159	.3562 –1.1896	.3817 –1.1822	.4553 –1.1740
.4199 –1.1595	.2825 –1.1928	.3601 –1.1896	.3853 –1.1833	2452659 +
.4238 –1.1694	.2897 –1.1988	.3641 –1.1892	.3890 –1.1856	.2242 –1.2177
.4318 –1.1573	.2934 –1.2169	.3690 –1.1791	.3926 –1.1716	.2288 –1.2153
.4368 –1.1535	.2982 –1.2157	.3760 –1.1968	.3965 –1.1794	.2331 –1.2043

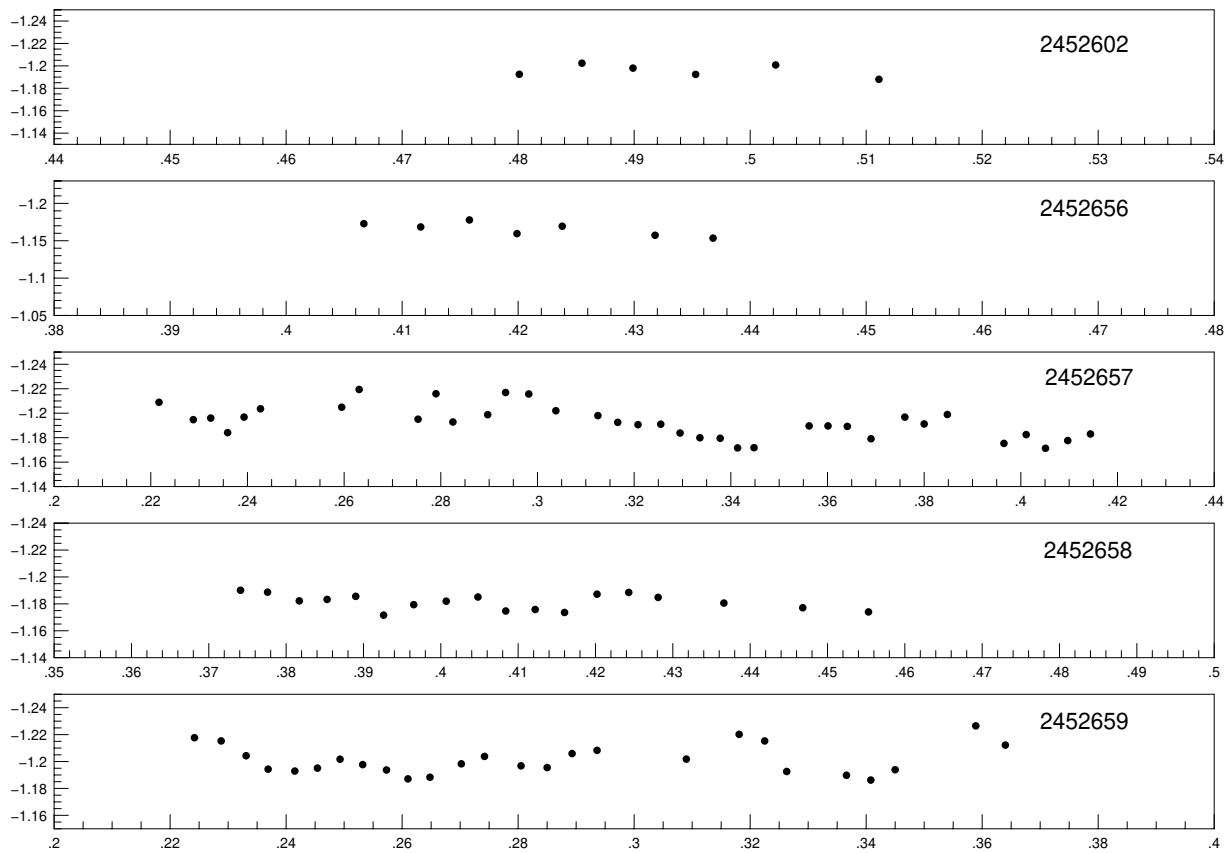


Figure 74: Differential light curves of μ Eri – ξ Eri in V colour

.2369 –1.1943	.2573 –1.1937	.2805 –1.1968	.3181 –1.2202	.3450 –1.1939
.2415 –1.1929	.2610 –1.1871	.2850 –1.1955	.3225 –1.2153	.3589 –1.2265
.2454 –1.1951	.2648 –1.1883	.2893 –1.2059	.3263 –1.1926	.3640 –1.2122
.2493 –1.2017	.2702 –1.1983	.2936 –1.2083	.3366 –1.1898	
.2532 –1.1977	.2742 –1.2038	.3090 –1.2018	.3408 –1.1862	

Maybe these dataset are not the best, but it is worthwhile to show it as an example of the participation of Konkoly Observatory in international cooperations. The archived files are: `nueri–Xieri.arch` (Table 107) and `mueri–Xieri.arch` (Table 108).

ψ Per and ζ Tau

I was invited by J. R. Percy (Canada) to participate in a multi-wavelength, multi-longitude campaign for the short-period-variable Be star, ζ Tau and ψ Per. A simultaneous IUE observation was also carried out by G. J. Peters. Ground-based spectroscopy and polarimetry was also obtained. The preliminary results of the campaign were presented by Peters et al. (1994). The photometric contribution was separately presented in Percy et al. (1994). Photometric observations were carried out in Arizona and Hungary in Johnson UBV colours. The observed data are arranged on the continuous light curve

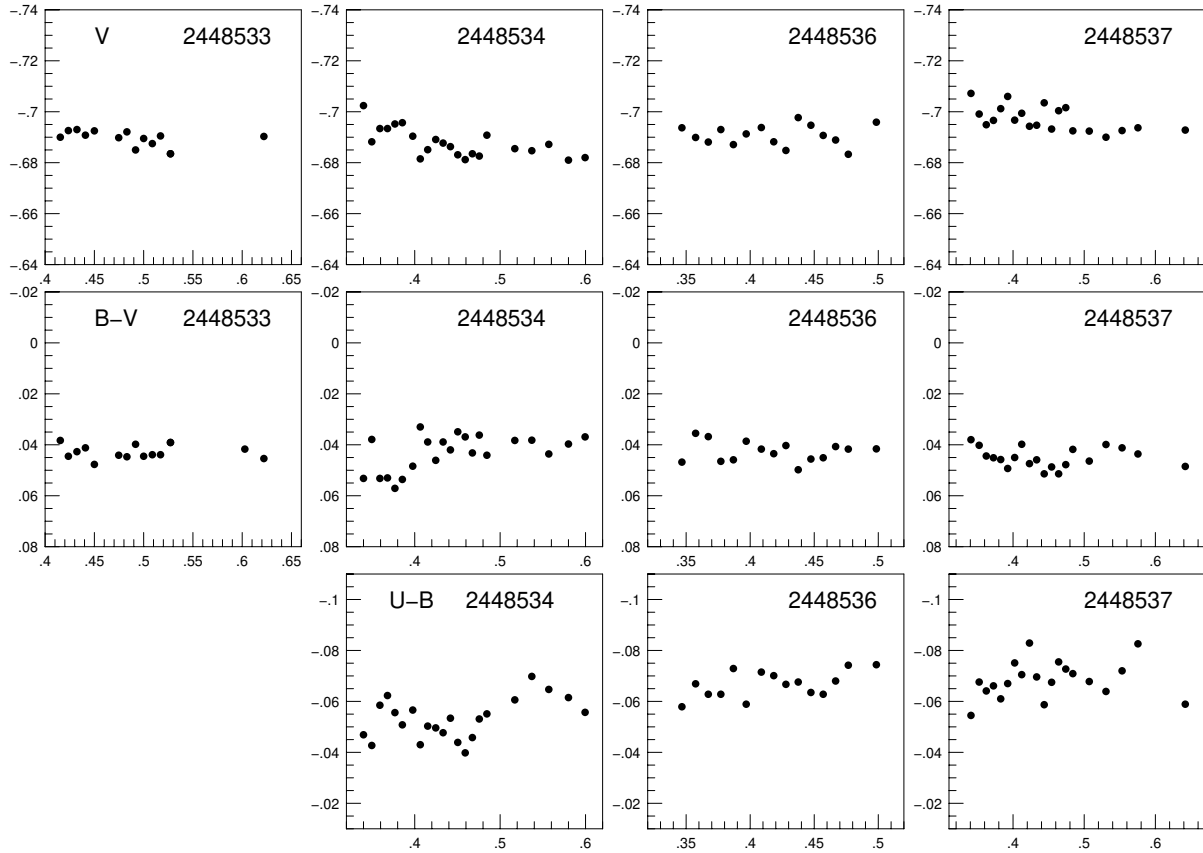


Figure 75: Differential light curves of ψ Per – HR 1034

calculated by possible periods for both ψ Per and ζ Tau. The 1.021 days gave the best representation of the photometric data of ψ Per (Figure 1. in the Percy et al. 1994 paper). The Hungarian observations (crosses) perfectly fit the sine curve. The total range of the light amplitude is only 0.0224. The most satisfactory period for ζ Tau was 0.665 day (or twice this value if the light curve is double waved). The light curve of ζ Tau is presented in Figure 2. of Percy et al. 1994 paper. The amplitude of the light variation is larger, the total range was 0.06. The independent photometric observations were not published in the Percy et al. 1994 paper. There is a remark that the data are going to be archived at <https://cdarch.n-strasbg.fr/ftp/iau127>. Writing this paper I checked the link and although the link is valid, I did not find the observed data obtained in 1991 for ψ Per and ζ Tau. I decided to include both the light curves and the tables of the Hungarian observations in this publication.

The Hungarian observations were carried out on 1991 Oct. 3/4 (2448533), Oct 4/5 (2448534), Oct 6/7 (2448536) and Oct 7/8 (2448537). The following comparison stars were used: HR 1034 and HR 1037 for ψ Per, and 126 Tau and 121 Tau for ζ Tau.

The differential light curves of ψ Per – HR 1034 are given in Figure 75, while the light curve of the comparison to check star, HR 1034 – HR 1037, is given in Figure 76. The figures organized in a compact way, all the nights and V , $B-V$ and $U-B$ values are arranged in one figure in different panels. The V data are given in the first line, the $B-V$ and $U-B$ are in the second and third line. The different rows represent different nights

marked by the JD values in the right corner of the panels. The empty panel means that there was no U colour observation on the given night (or the quality was not acceptable). The light variation of ψ Per seemingly is stable from night to night because, due to the near 1.02 days period, I observed always in the same phase of the pulsation cycle. The V , $B-U$ and $U-B$ data are given in the Tables 109, 110 and 111 for ψ Per – HR 1034.

Table 109. The differential data for ψ Per – HR 1034 in V colour

2448533 +	.6220 –0.6903	.4591 –0.6812	.4087 –0.6938	.4023 –0.6967
.4154 –0.6900	.6408 –0.7048	.4675 –0.6835	.4184 –0.6882	.4122 –0.6994
.4236 –0.6926	2448534 +	.4756 –0.6826	.4279 –0.6848	.4231 –0.6943
.4323 –0.6930	.3400 –0.7024	.4845 –0.6908	.4375 –0.6977	.4332 –0.6947
.4409 –0.6908	.3497 –0.6882	.5172 –0.6855	.4474 –0.6947	.4438 –0.7035
.4500 –0.6925	.3592 –0.6934	.5371 –0.6847	.4570 –0.6907	.4542 –0.6932
.4747 –0.6898	.3681 –0.6934	.5570 –0.6872	.4667 –0.6889	.4641 –0.7004
.4830 –0.6921	.3768 –0.6952	.5800 –0.6810	.4766 –0.6833	.4741 –0.7016
.4918 –0.6850	.3855 –0.6957	.5995 –0.6820	.4985 –0.6959	.4840 –0.6925
.5000 –0.6895	.3977 –0.6904	2448536 +	2448537 +	.5071 –0.6924
.5088 –0.6875	.4065 –0.6815	.3467 –0.6937	.3409 –0.7072	.5306 –0.6900
.5171 –0.6905	.4152 –0.6851	.3574 –0.6899	.3524 –0.6991	.5532 –0.6926
.5272 –0.6835	.4246 –0.6891	.3673 –0.6881	.3624 –0.6949	.5755 –0.6937
.5272 –0.6835	.4332 –0.6877	.3771 –0.6930	.3725 –0.6966	.6420 –0.6928
.5944 –0.8089	.4418 –0.6863	.3869 –0.6871	.3827 –0.7012	
.6027 –0.7127	.4504 –0.6831	.3969 –0.6913	.3925 –0.7060	

Table 110. The differential data for ψ Per – HR 1034 in $B-V$ colour

2448533 +	.6220 0.0454	.4591 0.0369	.4087 0.0417	.4023 0.0450
.4154 0.0383	.6408 0.0707	.4675 0.0432	.4184 0.0435	.4122 0.0398
.4236 0.0445	2448534 +	.4756 0.0362	.4279 0.0403	.4231 0.0474
.4323 0.0427	.3400 0.0532	.4845 0.0441	.4375 0.0498	.4332 0.0459
.4409 0.0412	.3497 0.0379	.5172 0.0383	.4474 0.0456	.4438 0.0514
.4500 0.0477	.3592 0.0532	.5371 0.0382	.4570 0.0451	.4542 0.0487
.4747 0.0441	.3681 0.0530	.5570 0.0436	.4667 0.0407	.4641 0.0514
.4830 0.0447	.3768 0.0571	.5800 0.0397	.4766 0.0417	.4741 0.0478
.4918 0.0398	.3855 0.0536	.5995 0.0369	.4985 0.0416	.4840 0.0418
.5000 0.0445	.3977 0.0484	2448536 +	2448537 +	.5071 0.0464
.5088 0.0439	.4065 0.0330	.3467 0.0468	.3409 0.0380	.5306 0.0399
.5171 0.0439	.4152 0.0389	.3574 0.0355	.3524 0.0402	.5532 0.0412
.5272 0.0391	.4246 0.0461	.3673 0.0368	.3624 0.0444	.5755 0.0436
.5272 0.0391	.4332 0.0389	.3771 0.0465	.3725 0.0451	.6420 0.0485
.5944 0.0727	.4418 0.0420	.3869 0.0459	.3827 0.0458	
.6027 0.0417	.4504 0.0349	.3969 0.0386	.3925 0.0493	

Table 111. The differential data for ψ Per – HR 1034 in $U-B$ colour

2448534 +	.3497 –0.0427	.3681 –0.0623	.3855 –0.0508	.4065 –0.0430
.3400 –0.0469	.3592 –0.0585	.3768 –0.0556	.3977 –0.0566	.4152 –0.0503

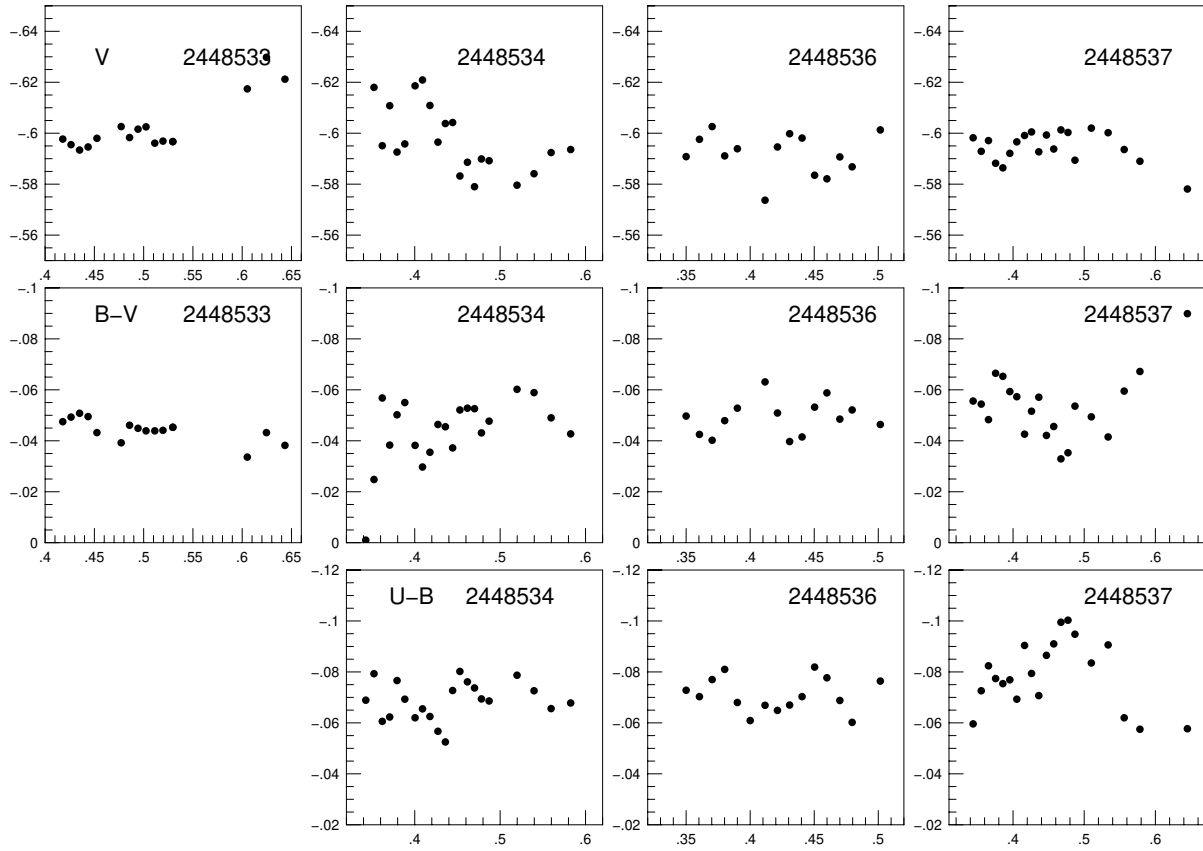


Figure 76: Differential light curves of HR 1034 – HR 1037

.4246 −0.0496	.5570 −0.0647	.4087 −0.0715	.3409 −0.0545	.4438 −0.0587
.4332 −0.0477	.5800 −0.0615	.4184 −0.0701	.3524 −0.0676	.4542 −0.0675
.4418 −0.0534	.5995 −0.0557	.4279 −0.0667	.3624 −0.0641	.4641 −0.0755
.4504 −0.0439	2448536 +	.4375 −0.0676	.3725 −0.0661	.4741 −0.0727
.4591 −0.0398	.3467 −0.0579	.4474 −0.0635	.3827 −0.0610	.4840 −0.0709
.4675 −0.0458	.3574 −0.0669	.4570 −0.0628	.3925 −0.0670	.5071 −0.0678
.4756 −0.0531	.3673 −0.0628	.4667 −0.0680	.4023 −0.0751	.5306 −0.0639
.4845 −0.0551	.3771 −0.0628	.4766 −0.0742	.4122 −0.0705	.5532 −0.0720
.5172 −0.0606	.3869 −0.0729	.4985 −0.0744	.4231 −0.0829	.5755 −0.0826
.5371 −0.0698	.3969 −0.0589	2448537 +	.4332 −0.0696	.6420 −0.0589

The Tables 112, 113 and 114 give V , $B-V$ and $B-U$ for HR 1034 – HR 1037, which correspond to the Fig 81.

Table 112. The differential data for HR 1034 – HR 1037 in V colour

2448533 +	.4436 −0.5946	.4943 −0.6016	.5296 −0.5967	.6434 −0.6212
.4179 −0.5977	.4526 −0.5980	.5024 −0.6025	.5296 −0.5967	2448534 +
.4263 −0.5955	.4772 −0.6026	.5113 −0.5961	.6052 −0.6174	.3427 −0.6584
.4350 −0.5934	.4857 −0.5983	.5196 −0.5969	.6246 −0.6298	.3523 −0.6180

.3620 -0.5951	.4700 -0.5790	.3900 -0.5939	.3439 -0.5982	.4673 -0.6013
.3707 -0.6108	.4781 -0.5899	.4000 -0.5276*	.3553 -0.5929	.4772 -0.6003
.3793 -0.5926	.4871 -0.5892	.4116 -0.5737*	.3655 -0.5971	.4870 -0.5894
.3884 -0.5958	.5198 -0.5796	.4213 -0.5946	.3755 -0.5882	.5100 -0.6020
.4004 -0.6186	.5397 -0.5841	.4308 -0.5998	.3857 -0.5864	.5336 -0.6002
.4091 -0.6209	.5597 -0.5924	.4405 -0.5981	.3955 -0.5921	.5562 -0.5936
.4178 -0.6109	.5826 -0.5936	.4503 -0.5835	.4053 -0.5966	.5783 -0.5890
.4272 -0.5965	2448536 +	.4599 -0.5821	.4162 -0.5991	.6450 -0.5781
.4359 -0.6038	.3500 -0.5908	.4700 -0.5907	.4260 -0.6005	
.4444 -0.6042	.3604 -0.5976	.4796 -0.5868	.4362 -0.5927	
.4529 -0.5832	.3703 -0.6026	.5016 -0.6013	.4469 -0.5993	
.4617 -0.5886	.3801 -0.5911	2448537 +	.4572 -0.5938	

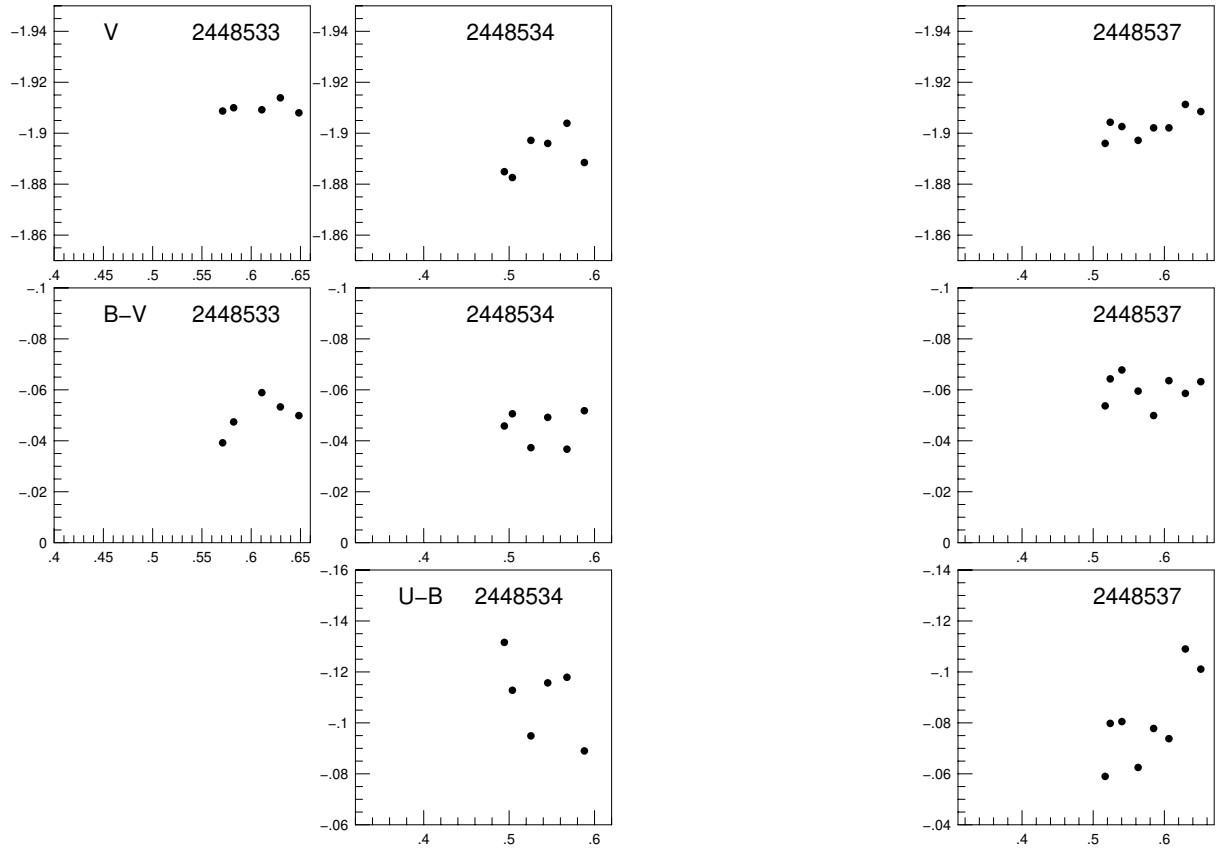
Table 113. The differential data for HR 1034 – HR 1037 in $B-V$ colour

2448533 +	.6434 -0.0382	.4700 -0.0526	.4308 -0.0397	.4260 -0.0516
.4179 -0.0475	2448534 +	.4781 -0.0431	.4405 -0.0415	.4362 -0.0571
.4263 -0.0493	.3427 -0.0010	.4871 -0.0477	.4503 -0.0532	.4469 -0.0421
.4350 -0.0508	.3523 -0.0248	.5198 -0.0602	.4599 -0.0588	.4572 -0.0456
.4436 -0.0495	.3620 -0.0568	.5397 -0.0589	.4700 -0.0485	.4673 -0.0329
.4526 -0.0432	.3707 -0.0383	.5597 -0.0490	.4796 -0.0521	.4772 -0.0353
.4772 -0.0392	.3793 -0.0502	.5826 -0.0427	.5016 -0.0464	.4870 -0.0536
.4857 -0.0461	.3884 -0.0550	2448536 +	2448537 +	.5100 -0.0494
.4943 -0.0449	.4004 -0.0382	.3500 -0.0497	.3439 -0.0556	.5336 -0.0415
.5024 -0.0439	.4091 -0.0297	.3604 -0.0425	.3553 -0.0544	.5562 -0.0595
.5113 -0.0439	.4178 -0.0355	.3703 -0.0402	.3655 -0.0483	.5783 -0.0672
.5196 -0.0441	.4272 -0.0464	.3801 -0.0479	.3755 -0.0665	.6450 -0.0899
.5296 -0.0453	.4359 -0.0455	.3900 -0.0528	.3857 -0.0653	
.5296 -0.0453	.4444 -0.0372	.4000 -0.1173*	.3955 -0.0593	
.6052 -0.0336	.4529 -0.0521	.4116 -0.0631*	.4053 -0.0573	
.6246 -0.0432	.4617 -0.0528	.4213 -0.0509	.4162 -0.0426	

Table 114. The differential data for HR 1034 – HR 1037 in $U-B$ colour

2448534 +	.4444 -0.0727	.3604 -0.0703	.4796 -0.0602	.4362 -0.0707
.3427 -0.0689	.4529 -0.0802	.3703 -0.0770	.5016 -0.0764	.4469 -0.0865
.3523 -0.0793	.4617 -0.0761	.3801 -0.0810	2447537 +	.4572 -0.0910
.3620 -0.0606	.4700 -0.0737	.3900 -0.0680	.3439 -0.0596	.4673 -0.0995
.3707 -0.0623	.4781 -0.0694	.4000 -0.0609	.3553 -0.0726	.4772 -0.1003
.3793 -0.0766	.4871 -0.0686	.4116 -0.0669	.3655 -0.0824	.4870 -0.0948
.3884 -0.0693	.5198 -0.0787	.4213 -0.0649	.3755 -0.0774	.5100 -0.0835
.4004 -0.0620	.5397 -0.0726	.4308 -0.0670	.3857 -0.0754	.5336 -0.0906
.4091 -0.0655	.5597 -0.0656	.4405 -0.0703	.3955 -0.0769	.5562 -0.0620
.4178 -0.0625	.5826 -0.0678	.4503 -0.0819	.4053 -0.0693	.5783 -0.0575
.4272 -0.0567	2448536 +	.4599 -0.0777	.4162 -0.0904	.6450 -0.0577
.4359 -0.0525	.3500 -0.0728	.4700 -0.0688	.4260 -0.0794	

The differential light curves for ζ Tau – 126 Tau are given in Figure 77 and Figure 78 show the 121 Tau – 126 Tau differences. The structure of the figures is similar as

Figure 77: Differential light curves of ζ Tau – 126 Tau

the previous ones, however, in these figures there are more empty panels. There was no observation on JD 2448536 in any colours. The more sporadic data are given in Table 115 and 116 in a compact way for each colour and night.

Table 115. The differential data for ζ Tau – 126 Tau for V , $B-V$ and $U-B$

V colour	.5881 –1.8885	.5822 –0.0474	.5239 –0.0643	.5677 –0.1179
2448533 +	2448537 +	.6108 –0.0589	.5403 –0.0678	.5881 –0.0890
.5710 –1.9087	.5168 –1.8960	.6296 –0.0533	.5631 –0.0595	2448537 +
.5822 –1.9100	.5239 –1.9043	.6484 –0.0499	.5849 –0.0499	.5168 –0.0590
.6108 –1.9092	.5403 –1.9026	2448534 +	.6064 –0.0636	.5239 –0.0798
.6296 –1.9139	.5631 –1.8972	.4944 –0.0458	.6295 –0.0586	.5403 –0.0805
.6484 –1.9080	.5849 –1.9021	.5038 –0.0506	.6512 –0.0632	.5631 –0.0625
2448534 +	.6064 –1.9021	.5255 –0.0373	U-B	.5849 –0.0778
.4944 –1.8849	.6295 –1.9113	.5452 –0.0492	2448534 +	.6064 –0.0738
.5038 –1.8826	.6512 –1.9085	.5677 –0.0367	.4944 –0.1316	.6295 –0.1090
.5255 –1.8972	B-V	.5881 –0.0518	.5038 –0.1128	.6512 –0.1011
.5452 –1.8960	2448533 +	2448537 +	.5255 –0.0949	
.5677 –1.9039	.5710 –0.0392	.5168 –0.0537	.5452 –0.1157	

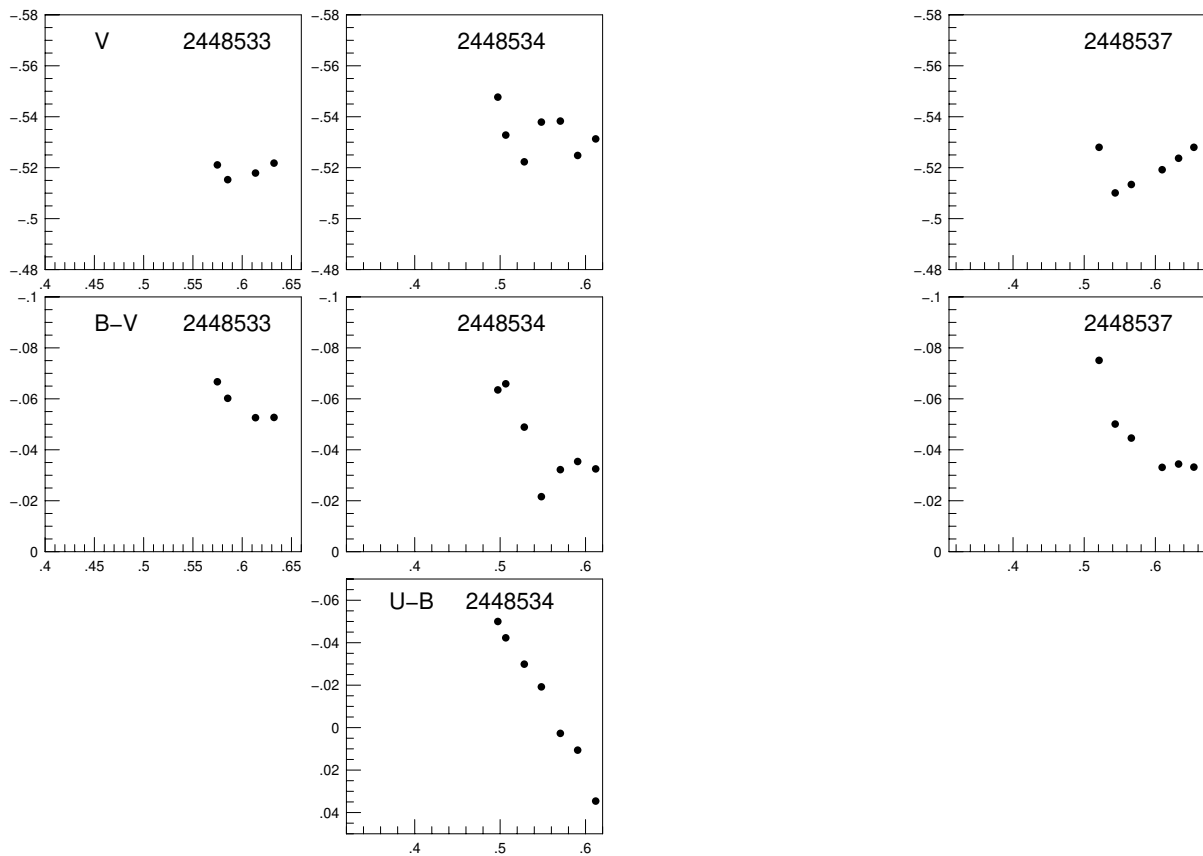


Figure 78: Differential light curves of 126 Tau – 121 Tau

Table 116. The differential data for 126 Tau – 121 Tau for V , $B-V$ and $U-B$

V	.5705 –0.5383	2448533 +	.5908 –0.0354	.4973 –0.0500
2448533 +	.5908 –0.5248	.5748 –0.0667	.6119 –0.0325	.5066 –0.0423
.5748 –0.5211	.6119 –0.5313	.5853 –0.0602	2448537 +	.5283 –0.0299
.5853 –0.5153	2448537 +	.6135 –0.0526	.5209 –0.0751	.5483 –0.0192
.6135 –0.5179	.5209 –0.5280	.6323 –0.0527	.5435 –0.0501	.5705 +0.0027
.6323 –0.5218	.5435 –0.5101	2448534 +	.5662 –0.0446	.5908 +0.0106
2448534 +	.5662 –0.5134	.4973 –0.0635	.6095 –0.0331	.6119 +0.0346
.4973 –0.5477	.6095 –0.5192	.5066 –0.0659	.6326 –0.0344	
.5066 –0.5328	.6326 –0.5237	.5283 –0.0489	.6541 –0.0332	
.5283 –0.5223	.6541 –0.5280	.5483 –0.0216	U-B	
.5483 –0.5379	B-V	.5705 –0.0322	2448534 +	

Although these observations are not long and dominant for the stars, they nicely show how deeply Konkoly Observatory was involved in the international cooperation. The archived files are: psiper–HR1034.arch (Tables 109, 110 and 111), HR1034–HR1037.arch (Tables 112, 113 and 114), zetatau–126tau.arch (Table 115) and 126tau121tau.arch (Table 116).

TV Boo

RR Lyrae stars were regularly observed in Konkoly Observatory. The classical pulsating stars, located over the main sequence in the instability strip, were the main field of the research. They are characterized by light variation of high amplitude and the periods are short enough to be covered in a night.

TV Boo was earlier observed in 1958 and 1959. In 1992 TV Boo was started to be observed as an RRc star with possible Blazhko effect. We planned a coordinated observation with J. H. Peña in Mexico, but finally it was not carried out. The Blazhko effect was known for the RRab type stars, however, at that time it was not commonly accepted for RRc stars. The brightness of TV Boo is 8.64 mag in V colour, while the $B-V$ values change between +0.15 and +0.26 during the pulsational cycle. The pulsational period is 0.31 day, while the Blazhko period was suspected at about 33.5 day. I present here the up-to-now unpublished data on TV Boo. The journal of observation is given in Table 117.

Table 117. Journal of the Hungarian observations obtained in 1992

Date (UT)	HJD 2400000+	Length day	Observations	Filter
March 4/5 1992	48686	0.1004	16	V,B
March 5/6 1992	48687	0.2233	50	V,B
March 7/8 1992	48689	0.2346	56	V,B
May 5/6 1992	48748	0.1234	26	V,B

Two comparison stars were observed. In the original protokoll the comparison c was marked as 10=c1, while comparison b as 11=c2. Comparison b(11) has a BD identification as BD 42° 2476. According to the new identification b star is TYC 3038-955-1 = GSC 03038-00955 = Gaia DR3 1492228392054306176. The c star did not have a BD identification, so only the new identification is presented here: TYC 3038-882-1 = GSC 03038-00882 = Gaia DR3 1492210761211561344.

The reduction of TV Boo was done compared both to c1 and c2 and the two comparisons were reduced to each other (c1–c2). The data for V colour are given in Table 118 for TV Boo–c1, Table 119 for TV Boo–c2 and Table 120 for c1–c2.

The differential light curve of TV Boo–c1 and c1–c2 are shown in Fig 79. The upper four panels give the light curves of the TV Boo, while the lower four panels display the constant light of the comparison stars.

Table 118. The differential data for TV Boo – c1 in V colour

2448686 +	0.6164 0.3081	0.6581 0.2113	0.4119 0.6531	0.4408 0.7655
0.5711 0.7979	0.6229 0.2201	0.6648 0.2109	0.4166 0.6730	0.4454 0.7269
0.5804 0.5775	0.6301 0.1924	0.6715 0.2517	0.4214 0.6709	0.4495 0.7743
0.5891 0.5737	0.6365 0.2343	2448687 +	0.4260 0.7077	0.4540 0.7625
0.6014 0.4533	0.6429 0.2219	0.4026 0.6231	0.4305 0.7523	0.4585 0.7371
0.6090 0.3768	0.6517 0.2508	0.4073 0.6574	0.4356 0.7507	0.4633 0.7805

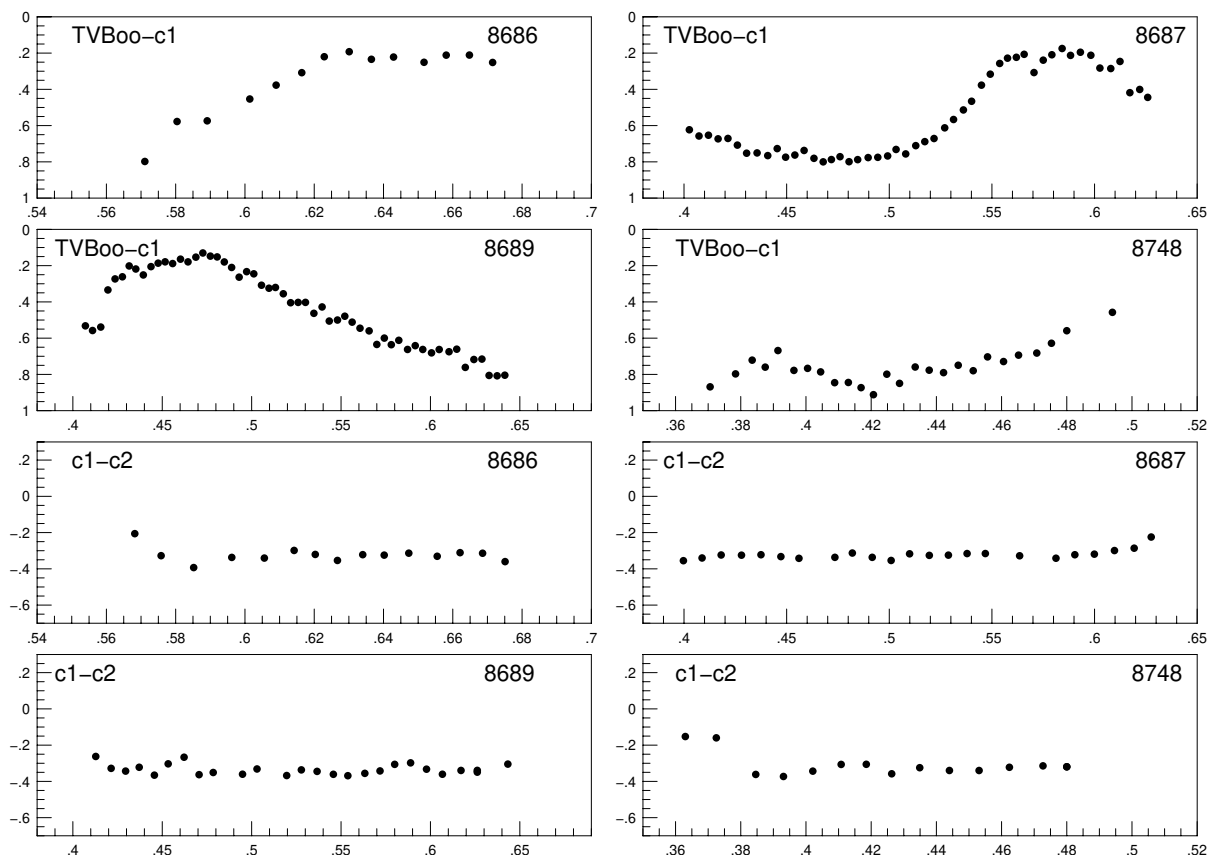


Figure 79: Differential light curves of TV Boo relative to c1 and c1-c2 in *V* colour

0.4678	0.8000	0.5576	0.2280	0.4196	0.3341	0.5012	0.2452	0.5872	0.6623
0.4718	0.7873	0.5619	0.2233	0.4236	0.2732	0.5055	0.3080	0.5915	0.6414
0.4760	0.7716	0.5657	0.2067	0.4277	0.2616	0.5097	0.3246	0.5957	0.6624
0.4804	0.7992	0.5705	0.3074	0.4315	0.2017	0.5133	0.3204	0.6006	0.6812
0.4846	0.7878	0.5750	0.2391	0.4352	0.2185	0.5177	0.3552	0.6049	0.6626
0.4897	0.7765	0.5792	0.2093	0.4394	0.2513	0.5218	0.4045	0.6104	0.6749
0.4944	0.7750	0.5842	0.1747	0.4437	0.2054	0.5260	0.4028	0.6147	0.6609
0.4992	0.7675	0.5883	0.2127	0.4477	0.1863	0.5301	0.4027	0.6195	0.7613
0.5033	0.7316	0.5931	0.1953	0.4516	0.1790	0.5348	0.4630	0.6243	0.7177
0.5080	0.7563	0.5982	0.2121	0.4558	0.1885	0.5394	0.4279	0.6288	0.7154
0.5129	0.7106	0.6026	0.2827	0.4602	0.1642	0.5434	0.5057	0.6328	0.8057
0.5173	0.6885	0.6079	0.2853	0.4644	0.1792	0.5480	0.5000	0.6373	0.8077
0.5218	0.6713	0.6124	0.2462	0.4688	0.1531	0.5521	0.4790	0.6416	0.8043
0.5270	0.6124	0.6172	0.4184	0.4727	0.1301	0.5562	0.5116	2448748 +	
0.5313	0.5664	0.6220	0.4006	0.4769	0.1475	0.5606	0.5452	0.3706	0.8686
0.5361	0.5137	0.6259	0.4443	0.4807	0.1519	0.5657	0.5598	0.3784	0.7971
0.5401	0.4658	2448689 +		0.4847	0.1796	0.5700	0.6347	0.3835	0.7213
0.5449	0.3769	0.4070	0.5321	0.4888	0.2100	0.5742	0.5997	0.3875	0.7599
0.5492	0.3163	0.4110	0.5579	0.4930	0.2636	0.5781	0.6361	0.3914	0.6684
0.5538	0.2571	0.4156	0.5388	0.4972	0.2331	0.5823	0.6119	0.3963	0.7779

0.4005 0.7666	0.4169 0.8730	0.4335 0.7592	0.4513 0.7797	0.4708 0.6822
0.4045 0.7861	0.4207 0.9118	0.4378 0.7767	0.4557 0.7033	0.4753 0.6281
0.4088 0.8455	0.4248 0.7988	0.4422 0.7902	0.4606 0.7290	0.4800 0.5590
0.4130 0.8445	0.4287 0.8494	0.4467 0.7494	0.4652 0.6937	0.4940 0.4576

Table 119. The differential data for TV Boo – c2 in V colour

2448686 +	0.4678 1.1359	0.6026 0.5935	0.5012 0.5900	0.6328 1.1490
0.5711 1.0339	0.4718 1.1209	0.6079 0.5864	0.5055 0.6369	0.6373 1.1364
0.5804 0.9782	0.4760 1.1078	0.6124 0.5417	0.5097 0.6593	0.6416 1.1156
0.5891 0.9372	0.4804 1.1211	0.6172 0.7073	0.5133 0.6670	2448748 +
0.6014 0.7962	0.4846 1.1000	0.6220 0.6665	0.5177 0.7167	0.3706 0.9967
0.6090 0.6980	0.4897 1.1011	0.6259 0.6816	0.5218 0.7642	0.3784 1.0430
0.6164 0.6074	0.4944 1.1187	2448689 +	0.5260 0.7465	0.3835 1.0615
0.6229 0.5609	0.4992 1.1195	0.4070 0.7495	0.5301 0.7356	0.3875 1.1372
0.6301 0.5363	0.5033 1.0748	0.4110 0.8063	0.5348 0.8020	0.3914 1.0472
0.6365 0.5527	0.5080 1.0804	0.4156 0.8228	0.5394 0.7836	0.3963 1.1269
0.6429 0.5410	0.5129 1.0305	0.4196 0.6488	0.5434 0.8676	0.4005 1.1063
0.6517 0.5791	0.5173 1.0123	0.4236 0.6174	0.5480 0.8596	0.4045 1.1305
0.6581 0.5319	0.5218 0.9973	0.4277 0.6103	0.5521 0.8433	0.4088 1.1694
0.6648 0.5149	0.5270 0.9375	0.4315 0.5357	0.5562 0.8854	0.4130 1.1471
0.6715 0.5856	0.5313 0.8876	0.4352 0.5427	0.5606 0.9122	0.4169 1.1761
2448387 +	0.5361 0.8305	0.4394 0.5854	0.5657 0.9084	0.4207 1.2292
0.4026 0.9666	0.5401 0.7803	0.4437 0.5616	0.5700 0.9775	0.4248 1.1441
0.4073 0.9958	0.5449 0.6916	0.4477 0.5345	0.5742 0.9291	0.4287 1.2001
0.4119 0.9888	0.5492 0.6382	0.4516 0.4952	0.5781 0.9488	0.4335 1.0909
0.4166 0.9999	0.5538 0.5914	0.4558 0.4879	0.5823 0.9136	0.4378 1.1025
0.4214 0.9975	0.5576 0.5730	0.4602 0.4433	0.5872 0.9600	0.4422 1.1247
0.4260 1.0341	0.5619 0.5600	0.4644 0.4600	0.5915 0.9503	0.4467 1.0951
0.4305 1.0695	0.5657 0.5161	0.4688 0.4865	0.5957 0.9875	0.4513 1.1237
0.4356 1.0675	0.5705 0.6120	0.4727 0.4897	0.6006 1.0233	0.4557 1.0309
0.4408 1.0976	0.5750 0.5606	0.4769 0.5008	0.6049 1.0182	0.4606 1.0499
0.4454 1.0623	0.5792 0.5449	0.4807 0.5143	0.6104 1.0336	0.4652 1.0076
0.4495 1.1039	0.5842 0.5190	0.4847 0.5431	0.6147 1.0096	0.4708 0.9943
0.4540 1.0977	0.5883 0.5463	0.4888 0.5569	0.6195 1.1030	0.4753 0.9438
0.4585 1.0897	0.5931 0.5145	0.4930 0.6143	0.6243 1.0643	0.4800 0.8774
0.4633 1.1324	0.5982 0.5304	0.4972 0.5941	0.6288 1.0641	0.4940 0.7837

Table 120. The differential data for c1 – c2 in V colour

2448686 +	0.6203 –0.3205	0.6686 –0.3140	0.4375 –0.3222	0.5099 –0.3171
0.5682 –0.2059	0.6267 –0.3537	0.6751 –0.3602	0.4472 –0.3326	0.5195 –0.3257
0.5758 –0.3274	0.6340 –0.3218	2448687 +	0.4560 –0.3420	0.5288 –0.3244
0.5852 –0.3930	0.6402 –0.3243	0.3997 –0.3551	0.4735 –0.3365	0.5379 –0.3157
0.5962 –0.3370	0.6473 –0.3135	0.4088 –0.3401	0.4820 –0.3128	0.5468 –0.3156
0.6056 –0.3406	0.6555 –0.3307	0.4181 –0.3236	0.4917 –0.3365	0.5635 –0.3280
0.6142 –0.2985	0.6621 –0.3107	0.4280 –0.3246	0.5009 –0.3538	0.5812 –0.3415

0.5904 −0.3222	0.4456 −0.3656	0.5457 −0.3609	0.6433 −0.3046	0.4349 −0.3245
0.5999 −0.3190	0.4533 −0.3031	0.5538 −0.3686	2448748 +	0.4440 −0.3398
0.6097 −0.2991	0.4622 −0.2666	0.5633 −0.3556	0.3630 −0.1525	0.4531 −0.3400
0.6193 −0.2860	0.4706 −0.3628	0.5718 −0.3423	0.3725 −0.1598	0.4624 −0.3222
0.6276 −0.2245	0.4785 −0.3509	0.5800 −0.3060	0.3846 −0.3616	0.4727 −0.3143
2448689 +	0.4949 −0.3604	0.5889 −0.2977	0.3931 −0.3729	0.4800 −0.3195
0.4128 −0.2625	0.5030 −0.3315	0.5978 −0.3326	0.4021 −0.3434	
0.4214 −0.3280	0.5196 −0.3677	0.6067 −0.3605	0.4108 −0.3064	
0.4295 −0.3432	0.5278 −0.3365	0.6171 −0.3396	0.4185 −0.3056	
0.4371 −0.3221	0.5366 −0.3448	0.6262 −0.3490	0.4263 −0.3580	

The data in B colour are given in Tables 121, 122 and 123 for TV Boo−c1, TV Boo−c2 and c1−c2. The light curves are similarly organized in a compact way in Fig 80.

Table 121. The differential data for TV Boo − c1 in B colour

2448686 +	0.4683 +0.5789	0.6031 −0.0813	0.5017 −0.0351	0.6333 +0.5081
0.5717 +0.5456	0.4723 +0.5152	0.6084 −0.0704	0.5061 −0.0105	0.6378 +0.5569
0.5810 +0.3262	0.4765 +0.5516	0.6129 −0.1417	0.5102 +0.0301	0.6421 +0.6298
0.5898 +0.1862	0.4809 +0.5362	0.6177 −0.0395	0.5138 +0.0938	2448748 +
0.6020 +0.1452	0.4851 +0.5293	0.6225 −0.1365	0.5182 +0.1349	0.3711 +0.7426
0.6096 −0.0367	0.4902 +0.5072	0.6264 −0.1062	0.5223 +0.0943	0.3789 +0.5860
0.6170 −0.0299	0.4949 +0.5415	2448689 +	0.5265 +0.1067	0.3840 +0.5319
0.6235 −0.1451	0.4997 +0.4813	0.4075 +0.4208	0.5306 +0.1998	0.3880 +0.5177
0.6307 −0.1330	0.5038 +0.4876	0.4115 +0.2688	0.5353 +0.1508	0.3919 +0.6721
0.6372 −0.1010	0.5085 +0.4763	0.4161 +0.1421	0.5399 +0.1738	0.3968 +0.5352
0.6435 −0.1138	0.5134 +0.4410	0.4201 +0.0742	0.5439 +0.1969	0.4009 +0.5748
0.6523 −0.1135	0.5178 +0.4377	0.4241 −0.0406	0.5485 +0.2361	0.4050 +0.6621
0.6587 −0.1053	0.5223 +0.3922	0.4283 −0.0253	0.5526 +0.2401	0.4093 +0.6272
0.6655 −0.1373	0.5275 +0.3101	0.4320 −0.0738	0.5567 +0.2539	0.4135 +0.6037
0.6721 +0.0019	0.5318 +0.2260	0.4357 −0.0949	0.5611 +0.2518	0.4174 +0.6018
2448687 +	0.5366 +0.1592	0.4399 −0.0892	0.5662 +0.3174	0.4212 +0.5565
0.4031 +0.3566	0.5406 +0.1326	0.4442 −0.1937	0.5705 +0.3605	0.4253 +0.5525
0.4078 +0.3287	0.5454 +0.0559	0.4482 −0.1560	0.5747 +0.2963	0.4291 +0.5368
0.4124 +0.3690	0.5497 +0.0073	0.4521 −0.2030	0.5786 +0.3515	0.4339 +0.5446
0.4171 +0.4240	0.5543 −0.0639	0.4563 −0.2084	0.5828 +0.4066	0.4383 +0.5044
0.4219 +0.4776	0.5581 −0.0778	0.4607 −0.2061	0.5877 +0.4259	0.4428 +0.5902
0.4265 +0.4712	0.5624 −0.1215	0.4649 −0.2385	0.5920 +0.4194	0.4473 +0.5507
0.4310 +0.4799	0.5662 −0.1476	0.4693 −0.2304	0.5962 +0.4405	0.4519 +0.5571
0.4361 +0.5116	0.5710 −0.0750	0.4732 −0.2047	0.6011 +0.3672	0.4563 +0.5295
0.4413 +0.5334	0.5755 −0.0770	0.4774 −0.1949	0.6054 +0.4462	0.4612 +0.4471
0.4459 +0.5941	0.5797 −0.1420	0.4812 −0.1780	0.6109 +0.4259	0.4658 +0.4396
0.4500 +0.5840	0.5847 −0.1520	0.4852 −0.1734	0.6152 +0.4012	0.4714 +0.3998
0.4545 +0.5742	0.5888 −0.1354	0.4893 −0.0969	0.6200 +0.5209	0.4759 +0.3578
0.4590 +0.5290	0.5936 −0.1701	0.4935 −0.0737	0.6248 +0.4902	0.4806 +0.3159
0.4638 +0.5308	0.5987 −0.1563	0.4977 −0.0908	0.6293 +0.5409	

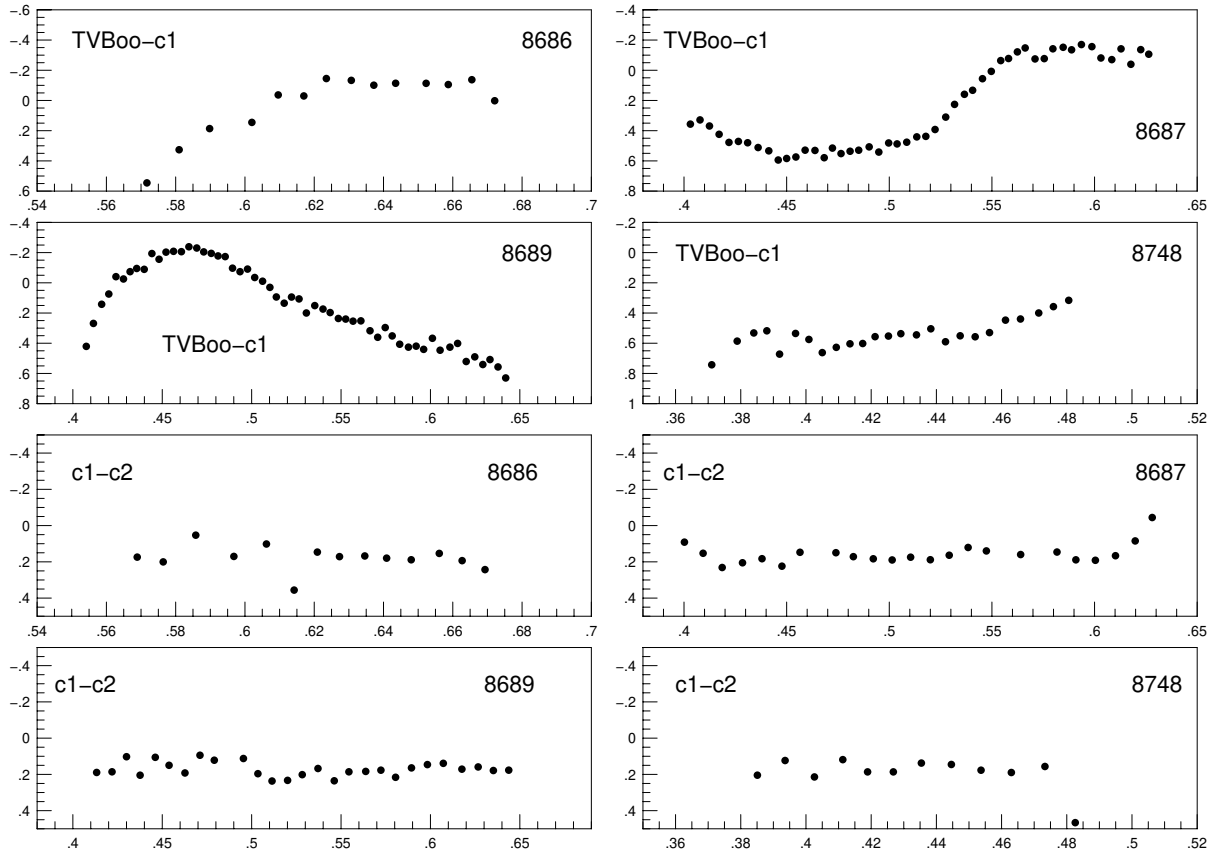
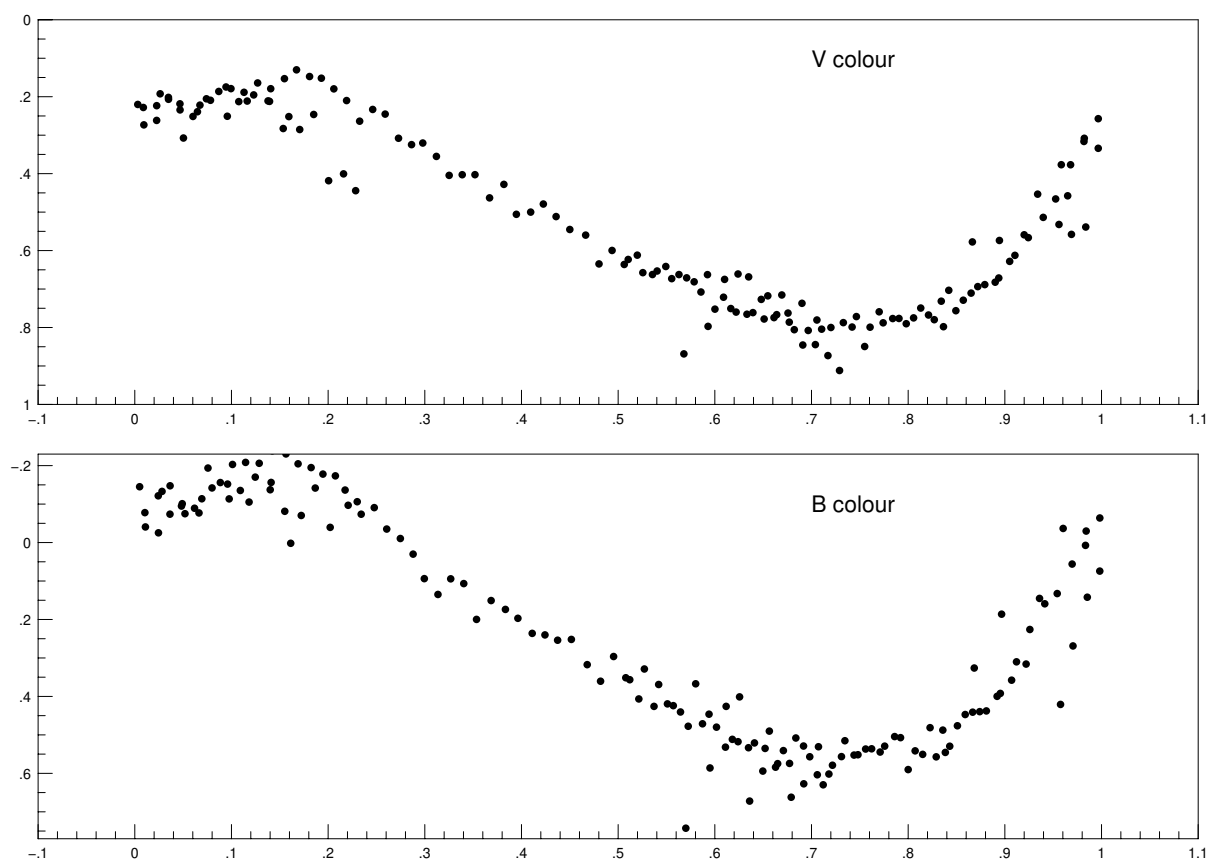


Figure 80: Differential light curves of TV Boo relative to c1 and c1-c2 in B colour

Table 122. The differential data for TV Boo – c2 in B colour

2448686 +	0.4124 +0.1928	0.4949 +0.3520	0.5755 -0.2420	0.4283 -0.1249
0.5717 +0.3557	0.4171 +0.2066	0.4997 +0.2896	0.5797 -0.2950	0.4320 -0.2234
0.5810 +0.2188	0.4219 +0.2477	0.5038 +0.3004	0.5847 -0.2997	0.4357 -0.2912
0.5898 +0.0848	0.4265 +0.2552	0.5085 +0.2977	0.5888 -0.3051	0.4399 -0.2591
0.6020 -0.0163	0.4310 +0.2813	0.5134 +0.2621	0.5936 -0.3644	0.4442 -0.3149
0.6096 -0.2108	0.4361 +0.3251	0.5178 +0.2525	0.5987 -0.3501	0.4482 -0.2763
0.6170 -0.3003	0.4413 +0.3361	0.5223 +0.2000	0.6031 -0.2727	0.4521 -0.3454
0.6235 -0.3105	0.4459 +0.3774	0.5275 +0.1355	0.6084 -0.2453	0.4563 -0.3613
0.6307 -0.3058	0.4500 +0.3759	0.5318 +0.0893	0.6129 -0.3084	0.4607 -0.3830
0.6372 -0.2722	0.4545 +0.4065	0.5366 +0.0420	0.6177 -0.1604	0.4649 -0.4238
0.6435 -0.3017	0.4590 +0.3917	0.5406 +0.0006	0.6225 -0.1789	0.4693 -0.3528
0.6523 -0.2761	0.4638 +0.3935	0.5454 -0.0847	0.6264 -0.0886	0.4732 -0.3064
0.6587 -0.2754	0.4683 +0.4277	0.5497 -0.1304	2448689 +	0.4774 -0.3110
0.6655 -0.3314	0.4723 +0.3626	0.5543 -0.2051	0.4075 +0.2495	0.4812 -0.2928
0.6721 -0.3094	0.4765 +0.3955	0.5581 -0.2267	0.4115 +0.0851	0.4852 -0.2883
2448687 +	0.4809 +0.3688	0.5624 -0.2784	0.4161 -0.0558	0.4893 -0.2229
0.4031 +0.2464	0.4851 +0.3615	0.5662 -0.3174	0.4201 -0.1194	0.4935 -0.1947
0.4078 +0.1866	0.4902 +0.3334	0.5710 -0.2481	0.4241 -0.1752	0.4977 -0.2155

0.5017	−0.2033	0.5526	+0.0449	0.6054	+0.3069	0.3840	+0.2905	0.4339	+0.4012
0.5061	−0.2288	0.5567	+0.0716	0.6109	+0.2842	0.3880	+0.3391	0.4383	+0.3524
0.5102	−0.2060	0.5611	+0.0702	0.6152	+0.2440	0.3919	+0.5319	0.4428	+0.4384
0.5138	+0.1418	0.5662	+0.1275	0.6200	+0.3483	0.3968	+0.3913	0.4473	+0.4021
0.5182	−0.0988	0.5705	+0.1767	0.6248	+0.3247	0.4009	+0.3854	0.4519	+0.3907
0.5223	−0.1326	0.5747	+0.1138	0.6293	+0.3781	0.4050	+0.4670	0.4563	+0.3466
0.5265	−0.1037	0.5786	+0.1490	0.6333	+0.3352	0.4093	+0.4810	0.4612	+0.2584
0.5306	+0.0119	0.5828	+0.2083	0.6378	+0.3789	0.4135	+0.4791	0.4658	+0.2604
0.5353	−0.0204	0.5877	+0.2549	0.6421	+0.4528	0.4174	+0.4396	0.4714	+0.2379
0.5399	−0.0199	0.5920	+0.2538	2448748	+	0.4212	+0.3576	0.4759	+0.1153
0.5439	−0.0261	0.5962	+0.2849	0.3711	+0.1330	0.4253	+0.3562	0.4806	−0.0834
0.5485	+0.0170	0.6011	+0.2249	0.3789	+0.1900	0.4291	+0.3665		

Figure 81: Phase diagram of TV Boo for V and B colour**Table 123.** The differential data for $c1 - c2$ in B colour

2448686	+	0.6062	0.1016	0.6409	0.1796	2448687	+	0.4380	0.1828
0.5689	0.1740	0.6142	0.3558	0.6480	0.1886	0.4002	0.0914	0.4477	0.2240
0.5764	0.2003	0.6209	0.1463	0.6561	0.1535	0.4093	0.1528	0.4565	0.1473
0.5858	0.0529	0.6273	0.1713	0.6627	0.1934	0.4186	0.2313	0.4740	0.1496
0.5968	0.1701	0.6346	0.1676	0.6693	0.2429	0.4285	0.2052	0.4825	0.1715

0.4922 0.1832	0.6198 0.0847	0.4954 0.1123	0.5983 0.1459	0.4189 0.1862
0.5014 0.1897	0.6281 -0.0445	0.5035 0.1961	0.6072 0.1390	0.4268 0.1862
0.5104 0.1744	2448689 +	0.5114 0.2366	0.6176 0.1711	0.4354 0.1375
0.5200 0.1884	0.4133 0.1893	0.5201 0.2329	0.6267 0.1589	0.4446 0.1453
0.5292 0.1635	0.4219 0.1857	0.5283 0.2014	0.6352 0.1786	0.4537 0.1769
0.5384 0.1208	0.4300 0.1025	0.5371 0.1674	0.6438 0.1767	0.4630 0.1896
0.5473 0.1398	0.4376 0.2045	0.5462 0.2353	2448748 +	0.4733 0.1564
0.5640 0.1598	0.4461 0.1058	0.5544 0.1858	0.3729 0.5590	0.4826 0.4662
0.5817 0.1460	0.4538 0.1498	0.5638 0.1836	0.3851 0.2044	
0.5909 0.1889	0.4627 0.1921	0.5723 0.1768	0.3936 0.1234	
0.6004 0.1915	0.4711 0.0944	0.5805 0.2160	0.4026 0.2141	
0.6102 0.1662	0.4791 0.1218	0.5894 0.1641	0.4113 0.1186	

The usual representation of the longer period variables, the phase diagrams are presented in Fig 81 for both V and B colours.

In my view it is worthwhile to archive these data, although plenty of space measurements are nowadays obtained for stars and the RRc stars with Blazhko effect are not rare anymore. Maybe after a while, not the quantity will dominate, but the specialities of the individuals will also be investigated. The archived files are: TVBoo-c1.arch (Table 118 and Table 121), TVBoo-c2.arch (Table 119 and Table 122) and c1-c2.arch (Table 120 and Table 123).

AC And

The AC And is a unique star in every respect which has been widely investigated both observationally and theoretically by many authors over many decades. My colleagues in Konkoly Observatory also joined the effort to explain the status of the unique star. An independent, complete Communication of the Konkoly Observatory was dedicated to the over 5 thousand photographic observation of the AC And by I. Guman (Guman 1981, 1982). My two other colleagues, Béla Szeidl and Géza Kovács, also investigated AC And and published papers (Fitch & Szeidl, 1976 and Kovács & Buchler, 1994). Another paper by Fernie (1994) also discussed the status of AC And. Both RR Lyrae or δ Scuti type of pulsating variables were mentioned as an identification for AC And. Compared to RR Lyrae stars, AC And has extremely high metal content and simultaneously pulsates in the first three radial modes. On the other hand, AC And locates between the δ Scuti and classical Cepheid stars on the common period-luminosity relation. It is regarded as a missing link between the two groups of variable stars. Lately, Kovács, Bakos & Hartman (2014) reported a rich frequency spectrum of the triple-mode variable AC And. The frequency spectrum was obtained from a light curve which contains 9600 datapoint gathered by HATNet. The periods are $P_0=0.7113519$, $P_1=0.5251592$ and $P_2=0.4210675$.

Due to the high interest for AC And in our observatory and an urgent need for Strömgren photometry getting a better determination of the metal content, I decided to organize a coordinated observation with Mexican and Chinese colleagues. Unfortunately, there was bad weather condition in China and the Hungarian observations were also not dominant. The Mexican observation obtained in Strömgren uvby and H beta was so dominant that finally the Mexican colleagues decided to publish the data indepen-

dently (Peña et al, 2005). Finally, the Hungarian observation on AC And has not been published up to now. I present here the Hungarian Johnson V and B observations carried out in 1992. We observed two comparison stars, but they were given only on chart. In present days there are plenty of possibilities for identification. The two comparisons were marked as 10 and 11 in the observing protocol. According to the identification 10 = star d, while 11 = star c. The identification in the modern catalogues are:

star d (10) = TYC 3644-1874-1 = GSC 03644-01874 = Gaia DR3 1942634293764537472

star c (11) = TYC 3644-1896-1 = GSC 03644-01896 = Gaia DR3 1942630239315465984 (BD 48°3989).

The journal of the Hungarian observations is given in Table 124.

Table 124. Journal of the Hungarian observations obtained in 1992

Date (UT)	HJD 2400000+	Length day	Observations	Filter
Sept 17/18 1992	48883	0.3053	39	V,B
Sept 18/19 1992	48884	0.2560	29	V,B
Sept 19/20 1992	48885	0.2965	34	V,B
Sept 20/21 1992	48886	0.2852	34	V,B
Sept 22/23 1992	48888	0.1687	17	V,B
Sept 24/25 1992	48890	0.1599	11	V,B
Sept 25/26 1992	48891	0.3557	48	V,B
Sept 26/27 1992	48892	0.3059	38	V,B
	All	2.1332	250	V,B

The differential data are given independently for AC And – 10, AC And – 11 and 10 – 11 in *V* colour in Tables 125, 126, and 127. The light curves are given in Figures 82, 83 and 84.

Table 125. The differential data for AC And – 10 in *V* colour

AC And – 10	0.4097 +0.0456	0.5259 +0.0947	0.3548 –0.1582	0.4814 +0.1217
V colour	0.4182 +0.0822	0.5357 +0.0893	0.3631 –0.1580	0.4904 +0.0808
2448883 +	0.4275 +0.1043	0.5444 +0.0759	0.3720 –0.1458	0.4998 +0.1421
0.3243 –0.0112	0.4358 +0.0947	0.5526 +0.1273	0.3805 –0.1134	0.5101 +0.1481
0.3306 +0.0125	0.4435 +0.0697	0.5610 +0.0551	0.3888 –0.0683	0.5193 +0.1390
0.3373 +0.0938	0.4514 +0.0967	0.5706 +0.0736	0.3976 –0.0624	0.5285 +0.1723
0.3456 +0.0578	0.4594 +0.1060	0.5788 +0.0587	0.4060 –0.0406	0.5373 +0.2192
0.3540 –0.0085	0.4679 +0.1052	0.5869 –0.0047	0.4150 –0.0554	0.5471 +0.1805
0.3616 +0.0590	0.4764 +0.1015	0.5961 –0.0578	0.4245 +0.0037	0.5563 +0.1739
0.3694 +0.0406	0.4846 +0.0508	0.6046 –0.1139	0.4342 –0.0034	0.5651 +0.2183
0.3779 +0.0109	0.4930 +0.1287	0.6132 –0.2413	0.4440 +0.0514	0.5734 +0.2056
0.3859 +0.0530	0.5015 +0.0921	0.6211 –0.2412	0.4527 +0.0223	0.5822 +0.1933
0.3937 +0.0340	0.5097 +0.1106	0.6296 –0.3392	0.4621 +0.0643	0.5918 +0.2237
0.4019 +0.0569	0.5178 +0.1035	2448884 +	0.4720 +0.0950	0.6010 +0.2278

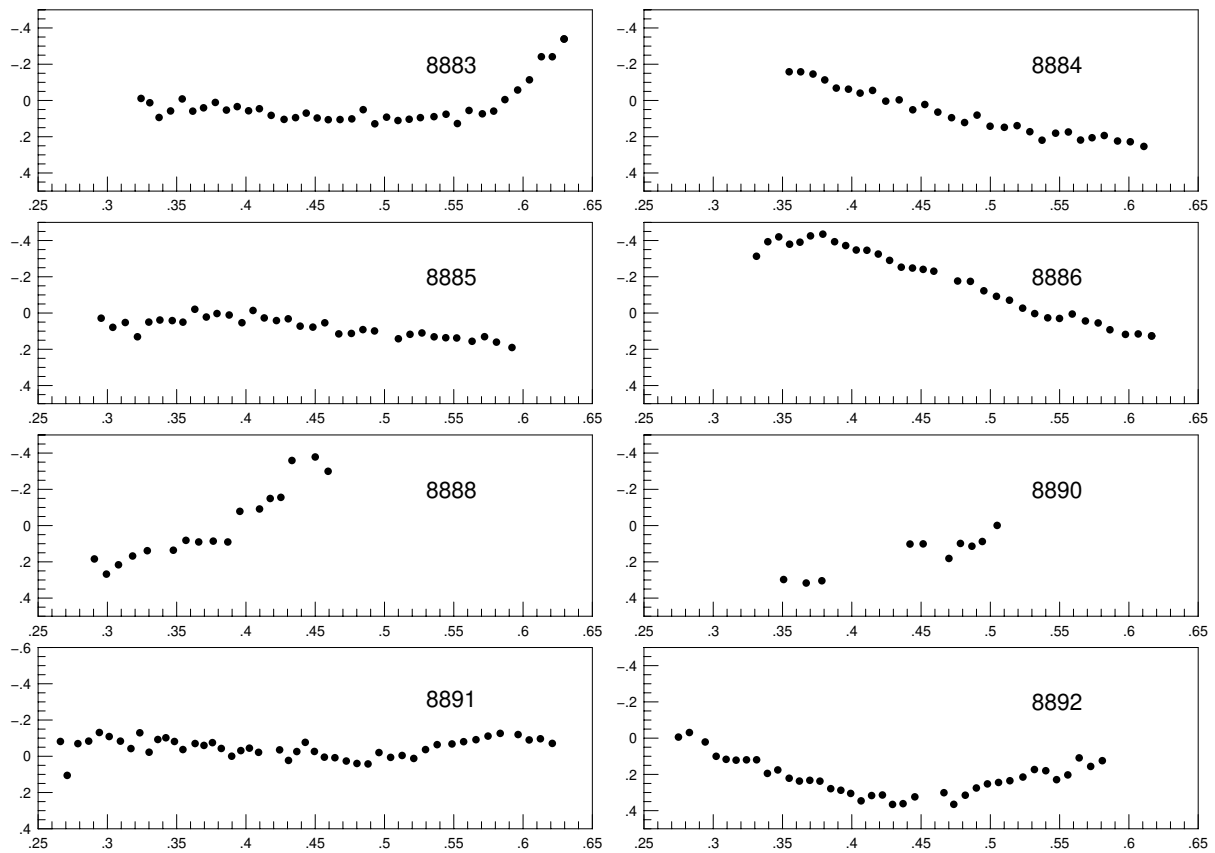


Figure 82: Differential light curves of AC And relative to 10 in V colour

0.6108 +0.2535	0.4483 +0.0777	0.3551 -0.3797	0.5320 +0.0031	0.3869 +0.0904
2448885 +	0.4569 +0.0539	0.3626 -0.3908	0.5414 +0.0265	0.3956 -0.0786
0.2955 +0.0285	0.4670 +0.1151	0.3702 -0.4256	0.5499 +0.0298	0.4098 -0.0916
0.3039 +0.0789	0.4761 +0.1126	0.3791 -0.4351	0.5591 +0.0056	0.4175 -0.1495
0.3129 +0.0523	0.4844 +0.0915	0.3876 -0.3934	0.5686 +0.0438	0.4252 -0.1557
0.3217 +0.1310	0.4928 +0.0989	0.3956 -0.3721	0.5778 +0.0547	0.4332 -0.3591
0.3299 +0.0500	0.5100 +0.1419	0.4032 -0.3476	0.5863 +0.0923	0.4500 -0.3785
0.3379 +0.0386	0.5184 +0.1175	0.4109 -0.3462	0.5975 +0.1179	0.4593 -0.2995
0.3468 +0.0417	0.5270 +0.1099	0.4191 -0.3253	0.6067 +0.1154	2448890 +
0.3545 +0.0503	0.5358 +0.1313	0.4273 -0.2905	0.6164 +0.1265	0.3508 +0.2976
0.3631 -0.0208	0.5442 +0.1363	0.4357 -0.2528	2448888 +	0.3671 +0.3168
0.3714 +0.0221	0.5521 +0.1376	0.4438 -0.2481	0.2906 +0.1840	0.3784 +0.3044
0.3791 +0.0028	0.5632 +0.1558	0.4515 -0.2408	0.2993 +0.2677	0.4420 +0.1018
0.3879 +0.0109	0.5722 +0.1305	0.4592 -0.2308	0.3080 +0.2163	0.4515 +0.1009
0.3971 +0.0535	0.5808 +0.1605	0.4764 -0.1766	0.3182 +0.1678	0.4701 +0.1813
0.4051 -0.0141	0.5920 +0.1903	0.4856 -0.1746	0.3288 +0.1385	0.4784 +0.0985
0.4132 +0.0271	2448886 +	0.4953 -0.1226	0.3476 +0.1359	0.4867 +0.1139
0.4220 +0.0416	0.3312 -0.3132	0.5044 -0.0921	0.3567 +0.0814	0.4942 +0.0878
0.4305 +0.0319	0.3394 -0.3934	0.5138 -0.0707	0.3659 +0.0903	0.5049 -0.0010
0.4391 +0.0724	0.3473 -0.4201	0.5233 -0.0268	0.3764 +0.0857	2448891 +

0.2661 -0.0817	0.3897 -0.0003	0.5211 +0.0120	0.3165 +0.1214	0.4665 +0.3010
0.2710 +0.1054	0.3963 -0.0313	0.5296 -0.0369	0.3240 +0.1197	0.4736 +0.3651
0.2787 -0.0697	0.4025 -0.0448	0.5380 -0.0641	0.3313 +0.1195	0.4819 +0.3148
0.2865 -0.0836	0.4091 -0.0217	0.5487 -0.0680	0.3391 +0.1945	0.4899 +0.2750
0.2942 -0.1311	0.4164 +0.7754	0.5571 -0.0804	0.3466 +0.1754	0.4979 +0.2524
0.3013 -0.1089	0.4243 -0.0353	0.5660 -0.0915	0.3548 +0.2212	0.5059 +0.2445
0.3094 -0.0834	0.4307 +0.0229	0.5747 -0.1113	0.3622 +0.2368	0.5141 +0.2349
0.3170 -0.0425	0.4367 -0.0260	0.5835 -0.1263	0.3697 +0.2326	0.5235 +0.2146
0.3234 -0.1296	0.4428 -0.0769	0.5964 -0.1198	0.3770 +0.2372	0.5318 +0.1731
0.3301 -0.0224	0.4494 -0.0266	0.6044 -0.0901	0.3848 +0.2787	0.5400 +0.1797
0.3364 -0.0925	0.4566 +0.0049	0.6125 -0.0965	0.3921 +0.2875	0.5478 +0.2290
0.3422 -0.1021	0.4642 +0.0080	0.6211 -0.0710	0.3992 +0.3050	0.5559 +0.2028
0.3484 -0.0816	0.4724 +0.0263	2448892 +	0.4067 +0.3460	0.5641 +0.1089
0.3545 -0.0370	0.4801 +0.0397	0.2749 -0.0058	0.4143 +0.3167	0.5724 +0.1561
0.3633 -0.0703	0.4881 +0.0423	0.2828 -0.0310	0.4221 +0.3136	0.5808 +0.1244
0.3697 -0.0599	0.4960 -0.0205	0.2942 +0.0211	0.4294 +0.3656	
0.3758 -0.0752	0.5044 +0.0061	0.3021 +0.1001	0.4370 +0.3614	
0.3822 -0.0431	0.5127 -0.0044	0.3093 +0.1168	0.4455 +0.3239	

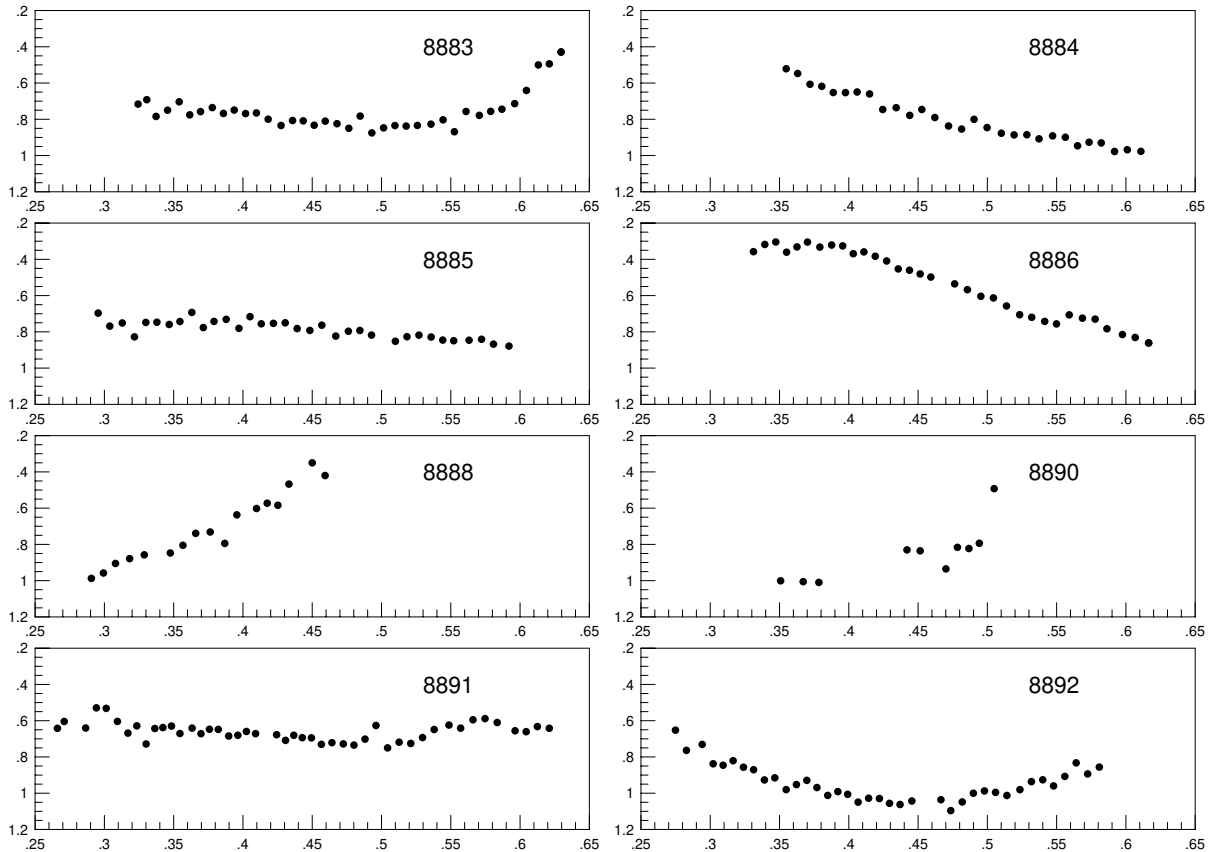
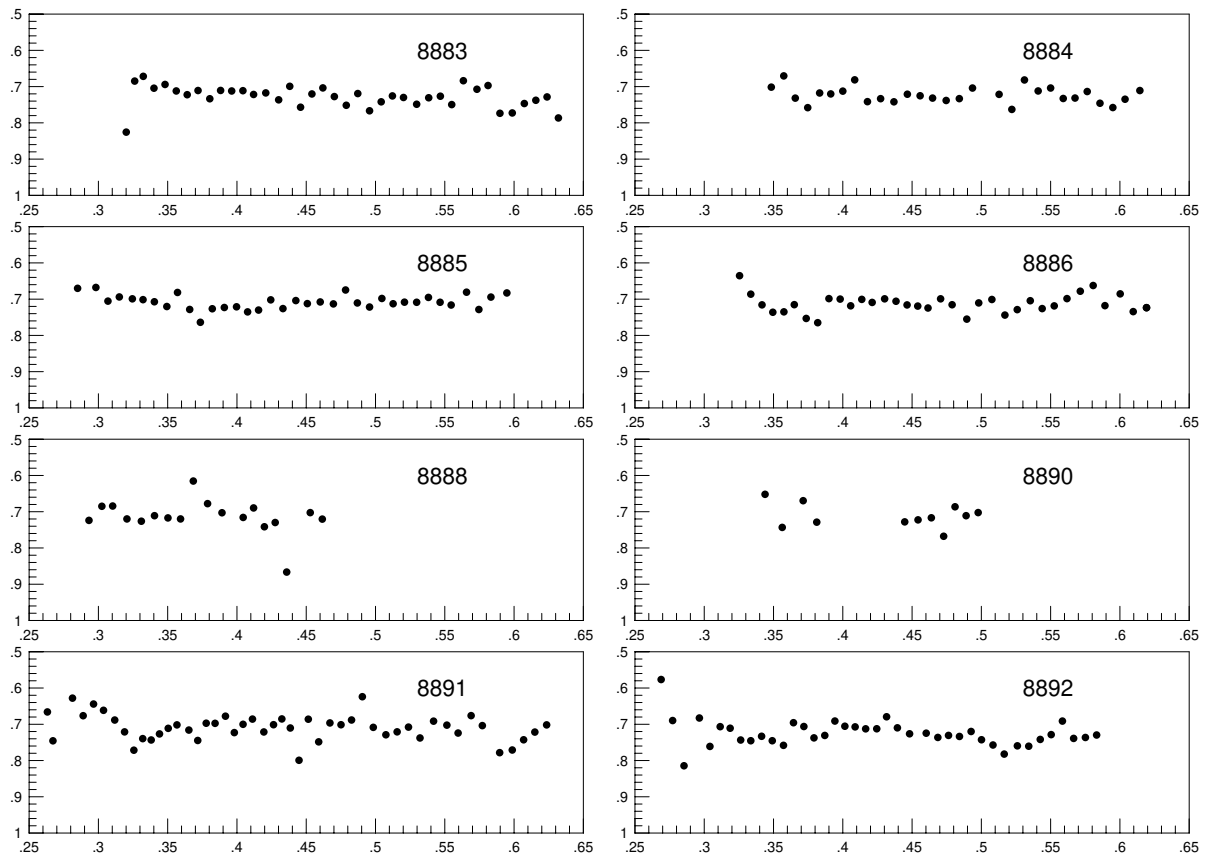
Figure 83: Differential light curves of AC And relative to 11 in *V* colour

Table 126. The differential data for AC And – 11 in V colour

AC And – 11	0.3805 0.6182	0.4483 0.7923	0.5778 0.7298	0.3301 0.7285
V colour	0.3888 0.6525	0.4569 0.7633	0.5863 0.7831	0.3364 0.6430
2448883 +	0.3976 0.6529	0.4670 0.8234	0.5975 0.8150	0.3422 0.6378
0.3243 0.7162	0.4060 0.6495	0.4761 0.7967	0.6067 0.8310	0.3484 0.6295
0.3306 0.6920	0.4150 0.6601	0.4844 0.7924	0.6164 0.8614	0.3545 0.6708
0.3373 0.7843	0.4245 0.7461	0.4928 0.8181	2448888 +	0.3633 0.6408
0.3456 0.7500	0.4342 0.7359	0.5100 0.8520	0.2906 0.9875	0.3697 0.6717
0.3540 0.7037	0.4440 0.7783	0.5184 0.8269	0.2993 0.9579	0.3758 0.6472
0.3616 0.7755	0.4527 0.7460	0.5270 0.8181	0.3080 0.9052	0.3822 0.6481
0.3694 0.7577	0.4621 0.7901	0.5358 0.8286	0.3182 0.8786	0.3897 0.6844
0.3779 0.7355	0.4720 0.8371	0.5442 0.8455	0.3288 0.8576	0.3963 0.6803
0.3859 0.7677	0.4814 0.8539	0.5521 0.8490	0.3476 0.8474	0.4025 0.6595
0.3937 0.7492	0.4904 0.8003	0.5632 0.8462	0.3567 0.8049	0.4091 0.6713
0.4019 0.7685	0.4998 0.8457	0.5722 0.8410	0.3659 0.7389	0.4243 0.6772
0.4097 0.7651	0.5101 0.8770	0.5808 0.8678	0.3764 0.7316	0.4307 0.7086
0.4182 0.7996	0.5193 0.8861	0.5920 0.8786	0.3869 0.7946	0.4367 0.6805
0.4275 0.8340	0.5285 0.8851	2448886 +	0.3956 0.6360	0.4428 0.6937
0.4358 0.8068	0.5373 0.9078	0.3312 0.3576	0.4098 0.6020	0.4494 0.6947
0.4435 0.8085	0.5471 0.8914	0.3394 0.3179	0.4175 0.5727	0.4566 0.7304
0.4514 0.8328	0.5563 0.8991	0.3473 0.3043	0.4252 0.5841	0.4642 0.7213
0.4594 0.8102	0.5651 0.9461	0.3551 0.3607	0.4332 0.4674	0.4724 0.7280
0.4679 0.8244	0.5734 0.9267	0.3626 0.3316	0.4500 0.3501	0.4801 0.7345
0.4764 0.8497	0.5822 0.9304	0.3702 0.3049	0.4593 0.4202	0.4881 0.7016
0.4846 0.7824	0.5918 0.9776	0.3791 0.3325	2448890 +	0.4960 0.6264
0.4930 0.8750	0.6010 0.9680	0.3876 0.3211	0.3508 1.0007	0.5044 0.7499
0.5015 0.8473	0.6108 0.9770	0.3956 0.3260	0.3671 1.0056	0.5127 0.7186
0.5097 0.8346	2448885 +	0.4032 0.3691	0.3784 1.0096	0.5211 0.7254
0.5178 0.8375	0.2955 0.6967	0.4109 0.3590	0.4420 0.8303	0.5296 0.6930
0.5259 0.8339	0.3039 0.7684	0.4191 0.3832	0.4515 0.8355	0.5380 0.6487
0.5357 0.8269	0.3129 0.7511	0.4273 0.4091	0.4609 1.1010	0.5487 0.6240
0.5444 0.8032	0.3217 0.8277	0.4357 0.4529	0.4701 0.9351	0.5571 0.6413
0.5526 0.8687	0.3299 0.7480	0.4438 0.4602	0.4784 0.8162	0.5660 0.5949
0.5610 0.7571	0.3379 0.7469	0.4515 0.4807	0.4867 0.8226	0.5747 0.5885
0.5706 0.7785	0.3468 0.7593	0.4592 0.4978	0.4942 0.7938	0.5835 0.6101
0.5788 0.7565	0.3545 0.7429	0.4764 0.5353	0.5049 0.4925	0.5964 0.6556
0.5869 0.7444	0.3631 0.6928	0.4856 0.5674	8244891 +	0.6044 0.6604
0.5961 0.7137	0.3714 0.7764	0.4953 0.6039	0.2661 0.6421	0.6125 0.6324
0.6046 0.6410	0.3791 0.7426	0.5044 0.6129	0.2710 0.6042	0.6211 0.6418
0.6132 0.5002	0.3879 0.7311	0.5138 0.6575	0.2787 0.3262	2448892 +
0.6211 0.4943	0.3971 0.7808	0.5233 0.7056	0.2865 0.6405	0.2749 0.6522
0.6296 0.4290	0.4051 0.7163	0.5320 0.7198	0.2942 0.5291	0.2828 0.7637
2448884 +	0.4132 0.7557	0.5414 0.7423	0.3013 0.5320	0.2942 0.7309
0.3548 0.5213	0.4220 0.7532	0.5499 0.7563	0.3094 0.6039	0.3021 0.8378
0.3631 0.5473	0.4305 0.7501	0.5591 0.7062	0.3170 0.6685	0.3093 0.8456
0.3720 0.6070	0.4391 0.7819	0.5686 0.7245	0.3234 0.6285	0.3165 0.8205

0.3240 0.8567	0.3770 0.9688	0.4294 1.0559	0.4979 0.9874	0.5559 0.9073
0.3313 0.8703	0.3848 1.0121	0.4370 1.0623	0.5059 0.9953	0.5641 0.8325
0.3391 0.9269	0.3921 0.9912	0.4455 1.0429	0.5141 1.0126	0.5724 0.8936
0.3466 0.9151	0.3992 1.0061	0.4665 1.0359	0.5235 0.9803	0.5808 0.8560
0.3548 0.9802	0.4067 1.0493	0.4736 1.0960	0.5318 0.9361	
0.3622 0.9523	0.4143 1.0274	0.4819 1.0482	0.5400 0.9260	
0.3697 0.9292	0.4221 1.0293	0.4899 1.0002	0.5478 0.9598	

Figure 84: Differential light curves of 10 relative to 11 in V colour**Table 127.** The differential data for 10 – 11 in V colour

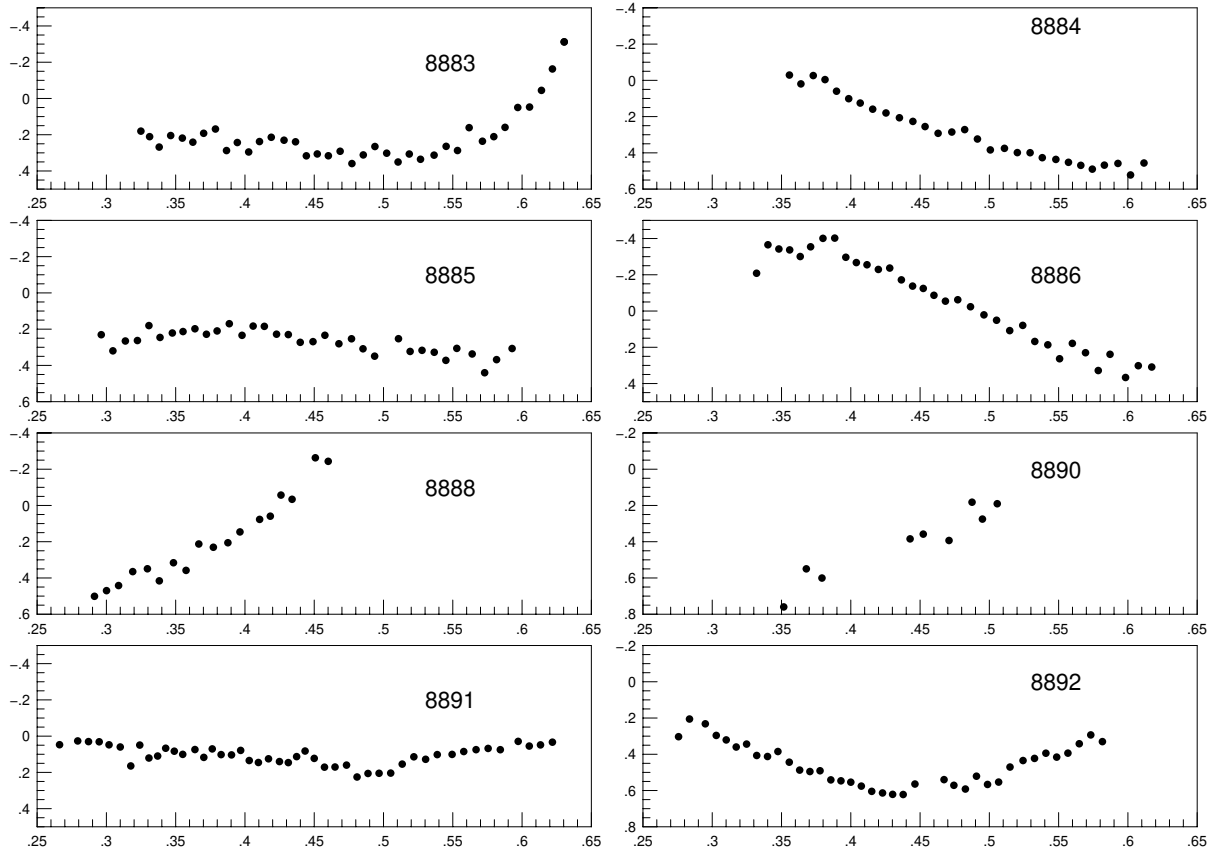
11 – 10	0.3719 0.7108	0.4541 0.7203	0.5384 0.7308	0.6238 0.7285
V colour	0.3804 0.7335	0.4620 0.7036	0.5468 0.7265	0.6320 0.7865
2448883 +	0.3882 0.7106	0.4703 0.7275	0.5550 0.7496	2448884 +
0.3201 0.8256	0.3962 0.7121	0.4789 0.7515	0.5634 0.6838	0.3484 0.7015
0.3262 0.6848	0.4043 0.7113	0.4872 0.7192	0.5732 0.7073	0.3574 0.6705
0.3324 0.6717	0.4120 0.7217	0.4957 0.7667	0.5812 0.6970	0.3657 0.7318
0.3401 0.7044	0.4208 0.7174	0.5041 0.7420	0.5898 0.7736	0.3747 0.7581
0.3481 0.6941	0.4301 0.7365	0.5122 0.7257	0.5987 0.7727	0.3833 0.7176
0.3562 0.7120	0.4381 0.6992	0.5202 0.7300	0.6074 0.7467	0.3913 0.7202
0.3641 0.7224	0.4459 0.7569	0.5297 0.7487	0.6157 0.7377	0.4000 0.7125

0.4086 0.6814	0.4696 0.7131	0.5618 0.6985	0.2813 0.6279	0.6150 0.7215
0.4178 0.7415	0.4784 0.6747	0.5714 0.6781	0.2890 0.6764	0.6235 0.7017
0.4273 0.7333	0.4869 0.7105	0.5807 0.6624	0.2965 0.6442	2448892 +
0.4369 0.7420	0.4957 0.7217	0.5892 0.7179	0.3037 0.6615	0.2689 0.5766
0.4466 0.7210	0.5046 0.6981	0.6002 0.6854	0.3118 0.6883	0.2772 0.6897
0.4558 0.7253	0.5127 0.7127	0.6096 0.7344	0.3189 0.7210	0.2854 0.8145
0.4648 0.7317	0.5209 0.7083	0.6192 0.7235	0.3256 0.7715	0.2965 0.6827
0.4746 0.7383	0.5297 0.7086	2448888 +	0.3320 0.7396	0.3041 0.7611
0.4841 0.7332	0.5382 0.6952	0.2818 1.0781	0.3381 0.7433	0.3115 0.7066
0.4936 0.7040	0.5466 0.7086	0.2932 0.7239	0.3441 0.7266	0.3187 0.7109
0.5128 0.7214	0.5546 0.7162	0.3025 0.6850	0.3504 0.7112	0.3263 0.7434
0.5220 0.7629	0.5657 0.6808	0.3103 0.6843	0.3567 0.7017	0.3336 0.7454
0.5311 0.6817	0.5746 0.7285	0.3206 0.7199	0.3653 0.7160	0.3414 0.7331
0.5410 0.7120	0.5833 0.6943	0.3310 0.7262	0.3717 0.7447	0.3491 0.7454
0.5500 0.7039	0.5948 0.6829	0.3405 0.7110	0.3778 0.6971	0.3572 0.7581
0.5591 0.7328	2448886 +	0.3502 0.7171	0.3842 0.6974	0.3644 0.6957
0.5676 0.7316	0.3255 0.6353	0.3593 0.7199	0.3917 0.6777	0.3719 0.7062
0.5764 0.7136	0.3336 0.6862	0.3685 0.6154	0.3981 0.7230	0.3792 0.7375
0.5856 0.7459	0.3417 0.7157	0.3788 0.6777	0.4044 0.7001	0.3870 0.7308
0.5949 0.7578	0.3495 0.7361	0.3892 0.7029	0.4112 0.6857	0.3943 0.6911
0.6037 0.7348	0.3575 0.7350	0.4045 0.7158	0.4194 0.7212	0.4015 0.7054
0.6144 0.7109	0.3650 0.7152	0.4120 0.6896	0.4264 0.7012	0.4089 0.7072
2448885 +	0.3736 0.7532	0.4198 0.7415	0.4324 0.6853	0.4165 0.7126
0.2850 0.6701	0.3819 0.7649	0.4276 0.7298	0.4385 0.7103	0.4245 0.7124
0.2982 0.6677	0.3900 0.6985	0.4359 0.8665	0.4448 0.7993	0.4316 0.6793
0.3069 0.7054	0.3981 0.6998	0.4529 0.7025	0.4515 0.6860	0.4394 0.7098
0.3151 0.6939	0.4057 0.7184	0.4616 0.7204	0.4590 0.7485	0.4482 0.7263
0.3245 0.6991	0.4137 0.7006	2448890 +	0.4671 0.6963	0.4602 0.7246
0.3322 0.7014	0.4212 0.7090	0.3439 0.6520	0.4751 0.7013	0.4686 0.7363
0.3404 0.7072	0.4302 0.6991	0.3563 0.7433	0.4827 0.6882	0.4763 0.7307
0.3494 0.7203	0.4384 0.7058	0.3714 0.6696	0.4905 0.6240	0.4842 0.7336
0.3571 0.6815	0.4464 0.7159	0.3812 0.7288	0.4984 0.7085	0.4926 0.7199
0.3659 0.7284	0.4541 0.7191	0.4447 0.7280	0.5075 0.7290	0.5001 0.7427
0.3736 0.7638	0.4615 0.7244	0.4543 0.7225	0.5156 0.7209	0.5084 0.7572
0.3822 0.7265	0.4706 0.6991	0.4639 0.7168	0.5238 0.7078	0.5165 0.7822
0.3909 0.7230	0.4789 0.7154	0.4728 0.7677	0.5321 0.7378	0.5260 0.7595
0.3997 0.7211	0.4895 0.7551	0.4810 0.6864	0.5419 0.6914	0.5342 0.7605
0.4077 0.7351	0.4981 0.7104	0.4890 0.7110	0.5515 0.7024	0.5425 0.7418
0.4156 0.7301	0.5076 0.7009	0.4977 0.7024	0.5596 0.7242	0.5504 0.7286
0.4244 0.7019	0.5170 0.7439	0.5107 0.1955	0.5690 0.6762	0.5585 0.6912
0.4332 0.7260	0.5259 0.7289	2448891 +	0.5771 0.7037	0.5666 0.7390
0.4425 0.7039	0.5353 0.7043	0.2632 0.6660	0.5896 0.7783	0.5751 0.7364
0.4508 0.7123	0.5439 0.7260	0.2672 0.7456	0.5987 0.7710	0.5832 0.7296
0.4601 0.7077	0.5526 0.7186	0.2731 0.2669	0.6069 0.7428	

The Johnson B data are given in Tables 128, 129 and 130 for AC And – 10, AC And – 11 and 10 – 11, respectively. The corresponding light curves are shown in Figures 85, 86 and 87.

Table 128. The differential data for AC And – 10 in B colour

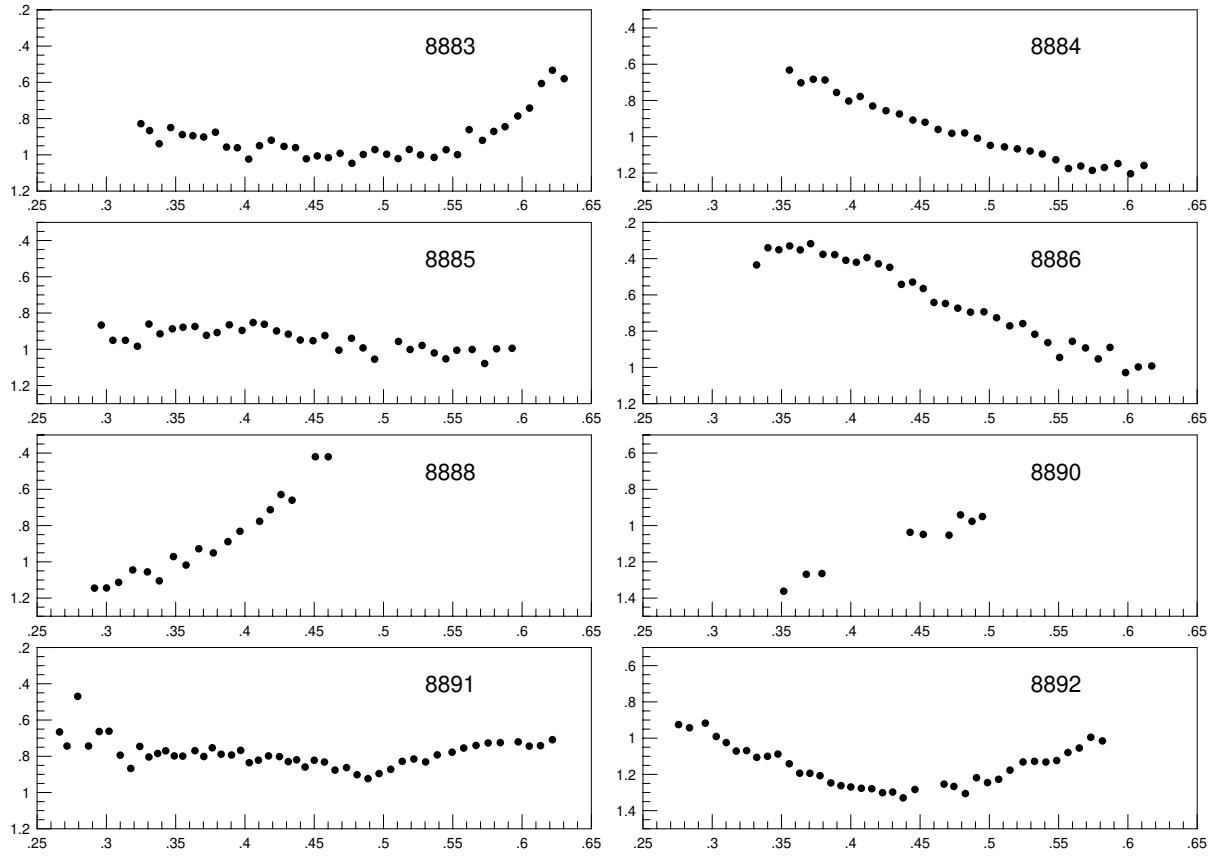
AC And – 10	0.6219 –0.1627	0.3476 +0.2212	0.4117 –0.2552	0.4260 –0.0572
B colour	0.6304 –0.3121	0.3553 +0.2133	0.4199 –0.2294	0.4340 –0.0340
2448883 +	2448884 +	0.3639 +0.1979	0.4281 –0.2370	0.4508 –0.2629
0.3249 +0.1802	0.3557 –0.0292	0.3722 +0.2281	0.4365 –0.1719	0.4601 –0.2435
0.3312 +0.2107	0.3640 +0.0196	0.3799 +0.2098	0.4446 –0.1375	2448890 +
0.3381 +0.2681	0.3729 –0.0264	0.3887 +0.1700	0.4523 –0.1246	0.3516 +0.7598
0.3464 +0.2045	0.3814 –0.0041	0.3979 +0.2340	0.4600 –0.0868	0.3679 +0.5497
0.3548 +0.2186	0.3897 +0.0599	0.4059 +0.1831	0.4683 –0.0545	0.3792 +0.6004
0.3624 +0.2411	0.3985 +0.1012	0.4140 +0.1845	0.4772 –0.0622	0.4428 +0.3844
0.3702 +0.1921	0.4068 +0.1253	0.4228 +0.2278	0.4864 –0.0236	0.4523 +0.3581
0.3787 +0.1686	0.4158 +0.1591	0.4313 +0.2300	0.4961 +0.0212	0.4709 +0.3933
0.3867 +0.2873	0.4254 +0.1800	0.4399 +0.2727	0.5052 +0.0509	0.4875 +0.1820
0.3945 +0.2430	0.4351 +0.2064	0.4491 +0.2689	0.5147 +0.1081	0.4950 +0.2752
0.4027 +0.2952	0.4448 +0.2265	0.4577 +0.2338	0.5241 +0.0792	0.5057 +0.1905
0.4105 +0.2377	0.4536 +0.2551	0.4678 +0.2805	0.5328 +0.1679	2448891 +
0.4190 +0.2140	0.4630 +0.2922	0.4769 +0.2531	0.5422 +0.1864	0.2662 +0.0473
0.4282 +0.2303	0.4729 +0.2852	0.4852 +0.3083	0.5507 +0.2632	0.2716 +0.3615
0.4365 +0.2390	0.4822 +0.2718	0.4936 +0.3490	0.5599 +0.1784	0.2793 +0.0265
0.4443 +0.3164	0.4914 +0.3237	0.5108 +0.2527	0.5694 +0.2300	0.2871 +0.0301
0.4522 +0.3061	0.5007 +0.3838	0.5192 +0.3230	0.5786 +0.3283	0.2948 +0.0312
0.4602 +0.3161	0.5109 +0.3751	0.5278 +0.3168	0.5871 +0.2388	0.3019 +0.0478
0.4687 +0.2912	0.5202 +0.3986	0.5366 +0.3275	0.5983 +0.3667	0.3100 +0.0598
0.4772 +0.3591	0.5294 +0.3993	0.5450 +0.3721	0.6075 +0.3016	0.3176 +0.1644
0.4854 +0.3114	0.5382 +0.4267	0.5529 +0.3060	0.6172 +0.3089	0.3241 +0.0493
0.4938 +0.2651	0.5480 +0.4362	0.5640 +0.3369	2448888 +	0.3307 +0.1207
0.5023 +0.3019	0.5571 +0.4522	0.5730 +0.4404	0.2914 +0.5011	0.3370 +0.1097
0.5105 +0.3505	0.5660 +0.4689	0.5816 +0.3682	0.3001 +0.4700	0.3428 +0.0667
0.5186 +0.3065	0.5743 +0.4898	0.5928 +0.3068	0.3088 +0.4418	0.3490 +0.0831
0.5267 +0.3355	0.5830 +0.4678	2448886 +	0.3190 +0.3650	0.3551 +0.1005
0.5365 +0.3127	0.5928 +0.4584	0.3320 –0.2084	0.3296 +0.3493	0.3639 +0.0740
0.5452 +0.2641	0.6019 +0.5219	0.3402 –0.3655	0.3382 +0.4159	0.3703 +0.1172
0.5534 +0.2871	0.6116 +0.4561	0.3481 –0.3423	0.3484 +0.3160	0.3764 +0.0704
0.5618 +0.1610	2448885 +	0.3559 –0.3371	0.3575 +0.3582	0.3828 +0.1019
0.5714 +0.2359	0.2963 +0.2306	0.3635 –0.3006	0.3667 +0.2126	0.3903 +0.1035
0.5796 +0.2107	0.3047 +0.3196	0.3710 –0.3543	0.3772 +0.2306	0.3969 +0.0787
0.5877 +0.1593	0.3137 +0.2654	0.3799 –0.4009	0.3877 +0.2057	0.4031 +0.1345
0.5969 +0.0498	0.3224 +0.2627	0.3884 –0.4023	0.3964 +0.1460	0.4097 +0.1454
0.6054 +0.0473	0.3307 +0.1803	0.3964 –0.2965	0.4106 +0.0769	0.4170 +0.1250
0.6140 –0.0447	0.3387 +0.2457	0.4040 –0.2673	0.4183 +0.0592	0.4249 +0.1403

Figure 85: Differential light curves of AC And relative to 10 in B colour

0.4313 +0.1460	0.5304 +0.1277	0.2836 +0.2056	0.3856 +0.5413	0.4987 +0.5665
0.4373 +0.1130	0.5388 +0.1019	0.2950 +0.2321	0.3929 +0.5465	0.5067 +0.5534
0.4434 +0.0821	0.5495 +0.1007	0.3029 +0.2961	0.4000 +0.5539	0.5149 +0.4705
0.4500 +0.1227	0.5579 +0.0849	0.3101 +0.3208	0.4076 +0.5757	0.5243 +0.4346
0.4574 +0.1711	0.5668 +0.0746	0.3173 +0.3599	0.4151 +0.6045	0.5326 +0.4228
0.4650 +0.1703	0.5755 +0.0678	0.3248 +0.3438	0.4229 +0.6134	0.5408 +0.3941
0.4733 +0.1598	0.5843 +0.0748	0.3321 +0.4067	0.4302 +0.6212	0.5486 +0.4157
0.4809 +0.2254	0.5972 +0.0289	0.3399 +0.4123	0.4378 +0.6220	0.5567 +0.3937
0.4888 +0.2059	0.6052 +0.0547	0.3474 +0.3848	0.4463 +0.5642	0.5649 +0.3420
0.4968 +0.2049	0.6133 +0.0482	0.3556 +0.4437	0.4673 +0.5399	0.5732 +0.2932
0.5052 +0.2038	0.6219 +0.0333	0.3631 +0.4873	0.4744 +0.5712	0.5816 +0.3303
0.5135 +0.1543	2448892 +	0.3705 +0.4953	0.4827 +0.5918	
0.5219 +0.1140	0.2757 +0.3031	0.3778 +0.4910	0.4907 +0.5210	

Table 129. The differential data for AC And – 11 in B colour

AC And – 11	0.3312 0.8661	0.3624 0.8946	0.3945 0.9609	0.4282 0.9531
B colour	0.3381 0.9386	0.3702 0.9016	0.4027 1.0235	0.4365 0.9602
2448883 +	0.3464 0.8495	0.3787 0.8751	0.4105 0.9493	0.4443 1.0215
0.3249 0.8282	0.3548 0.8883	0.3867 0.9572	0.4190 0.9193	0.4522 1.0059

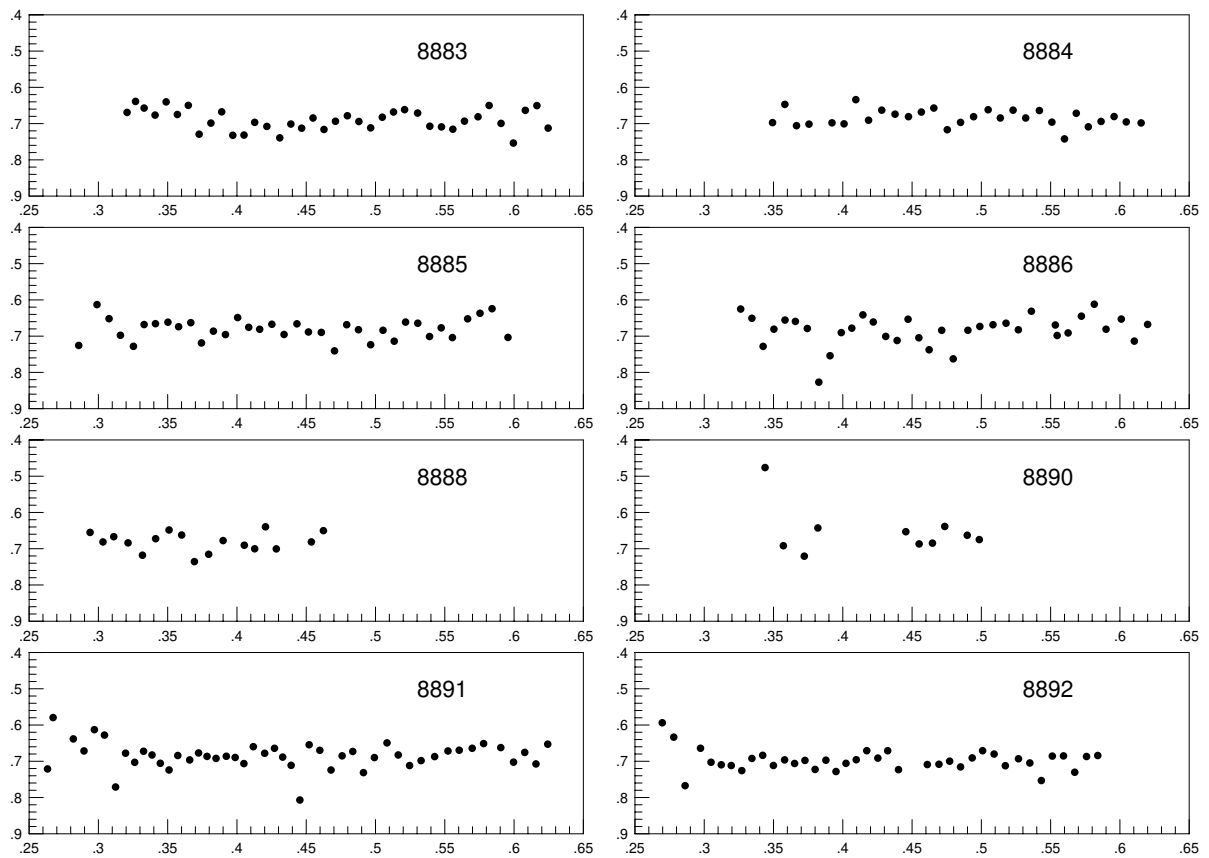
Figure 86: Differential light curves of AC And relative to 11 in *B* colour

0.4602 1.0157	0.6304 0.5797	0.5202 1.0670	0.3639 0.8742	0.5450 1.0528
0.4687 0.9917	2448884 +	0.5294 1.0788	0.3722 0.9230	0.5529 1.0053
0.4772 1.0466	0.3557 0.6323	0.5382 1.0952	0.3799 0.9077	0.5640 1.0010
0.4854 0.9977	0.3640 0.7025	0.5480 1.1271	0.3887 0.8649	0.5730 1.0785
0.4938 0.9707	0.3729 0.6828	0.5571 1.1754	0.3979 0.8957	0.5816 0.9974
0.5023 0.9964	0.3814 0.6870	0.5660 1.1619	0.4059 0.8525	0.5928 0.9946
0.5105 1.0206	0.3897 0.7562	0.5743 1.1856	0.4140 0.8620	2448886 +
0.5186 0.9701	0.3985 0.8030	0.5830 1.1698	0.4228 0.8987	0.3320 0.4346
0.5267 1.0003	0.4068 0.7780	0.5928 1.1480	0.4313 0.9167	0.3402 0.3401
0.5365 1.0139	0.4158 0.8304	0.6019 1.2043	0.4399 0.9489	0.3481 0.3510
0.5452 0.9718	0.4254 0.8563	0.6116 1.1584	0.4491 0.9527	0.3559 0.3298
0.5534 0.9988	0.4351 0.8744	2448885 +	0.4577 0.9241	0.3635 0.3516
0.5618 0.8612	0.4448 0.9080	0.2963 0.8666	0.4678 1.0049	0.3710 0.3175
0.5714 0.9200	0.4536 0.9200	0.3047 0.9505	0.4769 0.9391	0.3799 0.3763
0.5796 0.8707	0.4630 0.9600	0.3137 0.9505	0.4852 0.9923	0.3884 0.3779
0.5877 0.8447	0.4729 0.9812	0.3224 0.9833	0.4936 1.0547	0.3964 0.4092
0.5969 0.7857	0.4822 0.9790	0.3307 0.8609	0.5108 0.9569	0.4040 0.4204
0.6054 0.7421	0.4914 1.0083	0.3387 0.9149	0.5192 1.0010	0.4117 0.3942
0.6140 0.6065	0.5007 1.0477	0.3476 0.8870	0.5278 0.9789	0.4199 0.4283
0.6219 0.5334	0.5109 1.0560	0.3553 0.8786	0.5366 1.0202	0.4281 0.4478

0.4365 0.5418	0.3484 0.9712	0.2948 0.6635	0.4888 0.9234	0.3631 1.1935
0.4446 0.5294	0.3575 1.0178	0.3019 0.6619	0.4968 0.8955	0.3705 1.1940
0.4523 0.5646	0.3667 0.9279	0.3100 0.7940	0.5052 0.8718	0.3778 1.2071
0.4600 0.6418	0.3772 0.9508	0.3176 0.8672	0.5135 0.8279	0.3856 1.2469
0.4683 0.6475	0.3877 0.8888	0.3241 0.7456	0.5219 0.8151	0.3929 1.2620
0.4772 0.6731	0.3964 0.8316	0.3307 0.8040	0.5304 0.8313	0.4000 1.2693
0.4864 0.6952	0.4106 0.7763	0.3370 0.7845	0.5388 0.7923	0.4076 1.2765
0.4961 0.6933	0.4183 0.7125	0.3428 0.7700	0.5495 0.7775	0.4151 1.2789
0.5052 0.7261	0.4260 0.6288	0.3490 0.7982	0.5579 0.7547	0.4229 1.3011
0.5147 0.7708	0.4340 0.6599	0.3551 0.7993	0.5668 0.7402	0.4302 1.2975
0.5241 0.7583	0.4508 0.4203	0.3639 0.7693	0.5755 0.7265	0.4378 1.3294
0.5328 0.8171	0.4601 0.4205	0.3703 0.8013	0.5843 0.7247	0.4463 1.2832
0.5422 0.8631	2448890 +	0.3764 0.7531	0.5972 0.7206	0.4673 1.2537
0.5507 0.9450	0.3516 1.3621	0.3828 0.7886	0.6052 0.7440	0.4744 1.2663
0.5599 0.8562	0.3679 1.2685	0.3903 0.7930	0.6133 0.7414	0.4827 1.3057
0.5694 0.8923	0.3792 1.2646	0.3969 0.7673	0.6219 0.7086	0.4907 1.2183
0.5786 0.9530	0.4428 1.0372	0.4031 0.8353	2448892 +	0.4987 1.2454
0.5871 0.8895	0.4523 1.0487	0.4097 0.8216	0.2757 0.9254	0.5067 1.2272
0.5983 1.0286	0.4617 1.9992	0.4170 0.7979	0.2836 0.9428	0.5149 1.1765
0.6075 0.9972	0.4709 1.0529	0.4249 0.8019	0.2950 0.9175	0.5243 1.1316
0.6172 0.9923	0.4792 0.9409	0.4313 0.8297	0.3029 0.9909	0.5326 1.1278
2448888 +	0.4875 0.9765	0.4373 0.8197	0.3101 1.0245	0.5408 1.1319
0.2914 1.1451	0.4950 0.9501	0.4434 0.8594	0.3173 1.0713	0.5486 1.1234
0.3001 1.1440	2448891 +	0.4500 0.8222	0.3248 1.0688	0.5567 1.0793
0.3088 1.1131	0.2662 0.6657	0.4574 0.8317	0.3321 1.1061	0.5649 1.0546
0.3190 1.0447	0.2716 0.7435	0.4650 0.8763	0.3399 1.1003	0.5732 0.9950
0.3296 1.0553	0.2793 0.4694	0.4733 0.8624	0.3474 1.0879	0.5816 1.0152
0.3382 1.1048	0.2871 0.7434	0.4809 0.9020	0.3556 1.1412	

Table 130. The differential data for 10 – 11 in *B* colour

10 – 11	0.4216 0.7078	0.5558 0.7155	0.4094 0.6340	0.5600 0.7422
B colour	0.4309 0.7393	0.5642 0.6933	0.4186 0.6907	0.5685 0.6716
2448883 +	0.4389 0.7013	0.5740 0.6812	0.4281 0.6629	0.5772 0.7089
0.3207 0.6691	0.4467 0.7127	0.5820 0.6650	0.4377 0.6740	0.5864 0.6940
0.3268 0.6388	0.4549 0.6845	0.5906 0.6994	0.4474 0.6809	0.5958 0.6805
0.3330 0.6572	0.4628 0.7162	0.5995 0.7536	0.4567 0.6682	0.6046 0.6954
0.3409 0.6766	0.4711 0.6936	0.6081 0.6635	0.4657 0.6571	0.6153 0.6982
0.3489 0.6401	0.4797 0.6784	0.6165 0.6504	0.4754 0.7169	2448885 +
0.3570 0.6749	0.4880 0.6942	0.6246 0.7124	0.4850 0.6967	0.2858 0.7256
0.3649 0.6497	0.4965 0.7118	2448884 +	0.4944 0.6810	0.2990 0.6130
0.3727 0.7292	0.5049 0.6824	0.3493 0.6973	0.5049 0.6618	0.3077 0.6518
0.3812 0.6986	0.5130 0.6680	0.3582 0.6470	0.5137 0.6845	0.3159 0.6976
0.3890 0.6675	0.5210 0.6616	0.3666 0.7058	0.5229 0.6629	0.3253 0.7281
0.3970 0.7323	0.5304 0.6709	0.3756 0.7015	0.5320 0.6845	0.3330 0.6680
0.4051 0.7316	0.5392 0.7073	0.3922 0.6979	0.5419 0.6640	0.3412 0.6656
0.4128 0.6966	0.5476 0.7091	0.4009 0.7007	0.5509 0.6960	0.3502 0.6615

Figure 87: Differential light curves of 10 relative to 11 in B colour

0.3579 0.6739	0.5305 0.6643	0.4145 0.6413	0.5900 0.6809	0.4537 0.6813
0.3667 0.6628	0.5390 0.7010	0.4220 0.6610	0.6010 0.6529	0.4624 0.6502
0.3744 0.7187	0.5474 0.6770	0.4310 0.7008	0.6104 0.7137	2448890 +
0.3830 0.6862	0.5555 0.7039	0.4392 0.7120	0.6200 0.6676	0.3439 0.4762
0.3917 0.6956	0.5665 0.6522	0.4471 0.6533	2448888 +	0.3571 0.6918
0.4005 0.6487	0.5754 0.6369	0.4549 0.7045	0.2940 0.6550	0.3722 0.7206
0.4085 0.6756	0.5841 0.6243	0.4623 0.7376	0.3033 0.6813	0.3820 0.6427
0.4164 0.6810	0.5956 0.7035	0.4714 0.6839	0.3111 0.6669	0.4455 0.6531
0.4252 0.6672	2448886 +	0.4797 0.7626	0.3214 0.6839	0.4551 0.6868
0.4340 0.6954	0.3263 0.6252	0.4903 0.6838	0.3318 0.7179	0.4647 0.6846
0.4433 0.6660	0.3344 0.6507	0.4989 0.6733	0.3413 0.6724	0.4736 0.6386
0.4516 0.6885	0.3425 0.7282	0.5084 0.6685	0.3510 0.6483	0.4898 0.6629
0.4609 0.6896	0.3503 0.6808	0.5178 0.6643	0.3601 0.6622	0.4985 0.6748
0.4704 0.7406	0.3583 0.6556	0.5267 0.6824	0.3693 0.7356	2448891 +
0.4792 0.6684	0.3658 0.6593	0.5361 0.6313	0.3796 0.7154	0.2633 0.7212
0.4877 0.6822	0.3744 0.6789	0.5547 0.6981	0.3900 0.6776	0.2673 0.5795
0.4965 0.7237	0.3827 0.8269	0.5534 0.6692	0.4053 0.6904	0.2738 0.2622
0.5054 0.6838	0.3908 0.7540	0.5626 0.6911	0.4128 0.7002	0.2819 0.6383
0.5135 0.7139	0.3989 0.6902	0.5722 0.6449	0.4206 0.6396	0.2896 0.6715
0.5217 0.6612	0.4065 0.6779	0.5815 0.6120	0.4284 0.7005	0.2971 0.6128

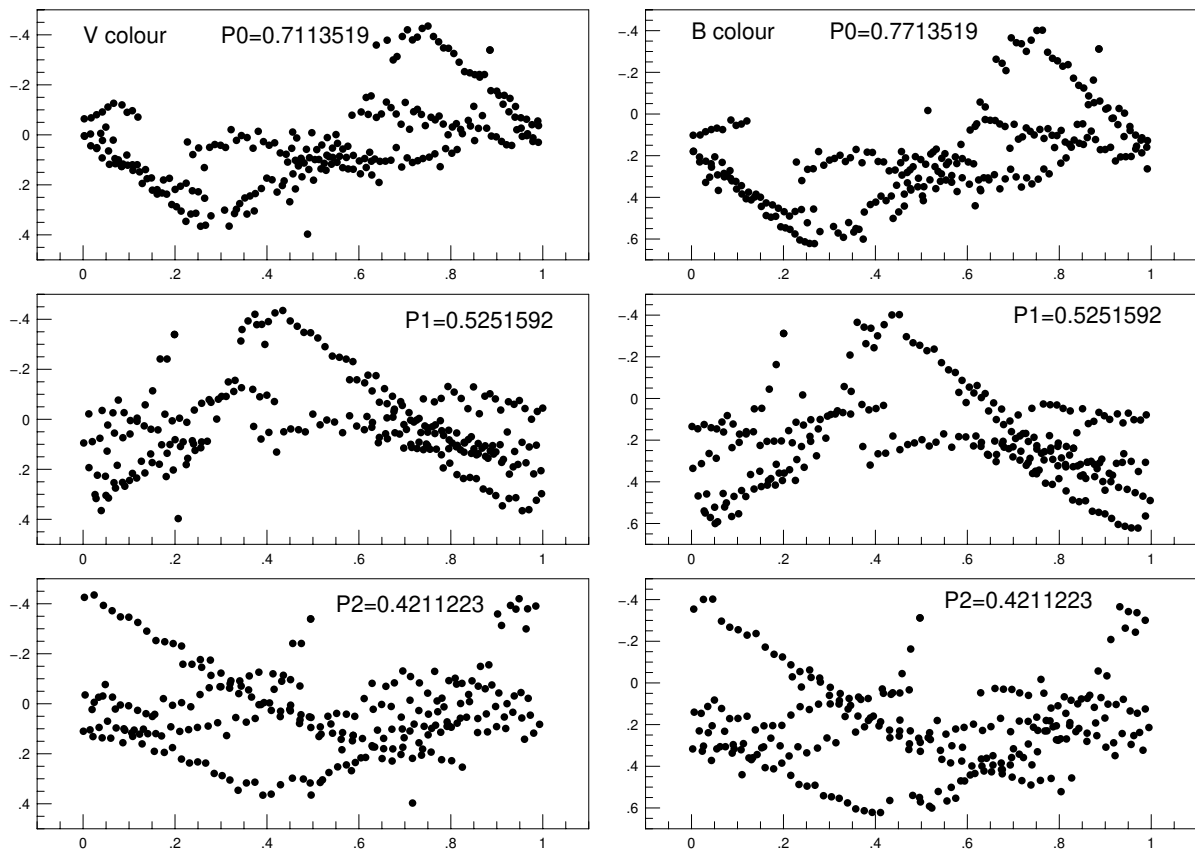


Figure 88: Phase diagram of AC And calculated for $P_0=0.7113519$, $P_1=0.5251592$ and $P_2=0.4211223$ for V colour (left panels) and for B colour (right panels.)

0.3044 0.6278	0.4200 0.6780	0.5523 0.6716	0.3271 0.7257	0.4694 0.7082
0.3124 0.7710	0.4271 0.6642	0.5604 0.6695	0.3344 0.6922	0.4771 0.6998
0.3196 0.6778	0.4330 0.6885	0.5698 0.6642	0.3422 0.6836	0.4850 0.7156
0.3262 0.7029	0.4391 0.7112	0.5780 0.6512	0.3499 0.7116	0.4934 0.6907
0.3326 0.6724	0.4454 0.8069	0.5904 0.6623	0.3580 0.6962	0.5009 0.6708
0.3387 0.6827	0.4521 0.6545	0.5996 0.7024	0.3652 0.7061	0.5092 0.6801
0.3447 0.7056	0.4598 0.6698	0.6077 0.6756	0.3727 0.6976	0.5173 0.7123
0.3510 0.7240	0.4679 0.7241	0.6158 0.7073	0.3800 0.7225	0.5268 0.6931
0.3573 0.6841	0.4759 0.6850	0.6243 0.6529	0.3878 0.6970	0.5350 0.7047
0.3659 0.6963	0.4836 0.6729	2448892 +	0.3951 0.7283	0.5433 0.7532
0.3723 0.6771	0.4913 0.7313	0.2697 0.5938	0.4023 0.7057	0.5512 0.6858
0.3784 0.6865	0.4992 0.6898	0.2780 0.6335	0.4097 0.6957	0.5593 0.6852
0.3849 0.6921	0.5083 0.6493	0.2862 0.7673	0.4173 0.6709	0.5674 0.7303
0.3923 0.6862	0.5164 0.6826	0.2973 0.6641	0.4253 0.6912	0.5759 0.6869
0.3987 0.6895	0.5246 0.7118	0.3049 0.7027	0.4324 0.6710	0.5840 0.6841
0.4050 0.7064	0.5329 0.6982	0.3123 0.7097	0.4402 0.7231	
0.4118 0.6598	0.5427 0.6871	0.3195 0.7118	0.4610 0.7090	

A typical representation of RR Lyrae star is the phase diagram. The phase diagram

was calculated both for V and B colours using $P_0=0.7113519$ period value of Kovács et al. (2014). The phase diagram is given in Figure 88.

The RR Lyrae stars, pulsating in a single dominant radial mode, used to show phase curve with nice sine wave. Due to the triple-mode pulsational behaviour, AC And does not show a typical phase curve. However, it is clearly seen that the dominant period, P_0 , due to the highest amplitude shows the cleanest sine wave. The second panel with P_1 period also well-ordered due to the slightly different period compared to P_0 and P_2 . Although the data presented here are not as massive as the photographic observations of I. Guman or the HATNet dataset, it is connected to the database of the Strömgren observations of J. H. Peña. The archived files are: ACAnd–10.arch (Table 125 and Table 128), ACAnd–11.arch (Table 126 and Table 129) and 10–11.arch (Table 127 and Table 130). Both V and B colours are given in these archived files.

GD 154

The white dwarf stars are pulsating stars located below the main sequence. They are old stars evolving to the final stage of the stellar life. Due to their rather simple stellar structure, successful theory exists for acceptable identification of the pulsation's modes.

The GD 154 white dwarf star was a target of a special project that I started for students. Allow me to follow a special protocol for the detailed documentation of the students' contributions. The project was a practical education for students who studied astronomy at the Eötvös Loránt University of Budapest (ELTE). The students named the group as Pizskéstető Student Astronomy (PiStA). The members of the group were: Eszter Bokor, Györgyi Kerekes, András Már, László Molnár, Péter I. Pápics, Emese Plachy and Nándor Sztankó. I had to find a target which was motivating for the students. A well-known expert of the field, Giles Fontaine from Montreal, Canada suggested that GD 154 white dwarf would be a perfect target for practical education of students. The main reason were the short period of light variation due to pulsation and the larger amplitude which is much larger than in the other white dwarf stars. The observation was carried out by the 1m telescope attached with a Princeton Instruments VersArray:1300B back-illuminated CCD camera without any filter. The log of the observations were given in a published paper (Paparó et al. 2013). The data were used for different purposes, at first for the competition of astronomical students in Hungary. Péter Pápics and László Molnár was one of the couple who worked together and they were the most successful. They won the first place of the Hungarian competition in that year (2006). To get publication for the members of the group before finishing the studies at the university a conference paper was published in Comm. in Astroseismology Vol. 154, 2008, by M. Paparó, E. Plachy, L. Molnár, P. I. Pápics, Zs. Bognár, N. Sztankó, Gy. Kerekes, A. Már and E. Bokor with a title "Preliminary Results in White Dwarf Research by a new group, named PiStA". After finishing the university some of them left the field of astronomy, but some of them stayed on the field of astronomy (E. Plachy - Cepheids, L. Molnár - RR Lyrae, P. I. Pápics - B stars). Zsófia Bognár was a honorable member of the group, since during this period she was my PhD student in the field of white dwarfs. In the following years shorter publications were also presented on GD 154.: Zs. Bognár and M. Paparó, 2013 arxiv 1301.2984, "Investigation of Rotational Splitting in the Pulsating white dwarf GD 154" and Paparó, M. and Bognár Zs., 2013 EPJWC 43050 43, 2013 (a conference in Liège) "GD 154:

white dwarf with multi- and monop periodic pulsation”. Later a more detailed investigation was published by some of us on “Multi-mode pulsation of the ZZ Ceti star GD 154, M. Paparó, Zs. Bognár, E. Plachy, L. Molnár and P. A. Bradley (from Los Alamos), 2013 MNRAS, 432, 5. As you see, variety of results were published but the data were not public, due to the short space in the international journals and it was not a standard way to put the data immediately in to the archive. In the present publication I make the data of the GD 154 available for the astronomical community. Since the period is short and a proper sampling is needed, one measurement does not take longer than 30 seconds, in the case of good sky it was only 10 seconds. Of course it means plenty of measurements that fills out many pages. The details of the observation has been presented in the Paparó et al. (2013) paper. For the published investigation the data on each night were shifted to a zero point. A different approach is published here, namely the relative value of GD 154 to two comparison stars, c1 and c2. In this approach the trends do not disappear, but due to the two comparison stars everybody can handle it. A map for the two comparison stars has been published in the Paparó et al. (2013) paper. The relative values of GD 154 – c1 are given in Table 131, while the c2 – c1 relativ values are presented in Table 132.

Table 131. The differential data for GD 154 – c1 in white light

GD 154 - c1	0.5316 2.837	0.5440 2.818	0.5567 2.809	0.5696 2.817
2453769+	0.5320 2.830	0.5444 2.813	0.5571 2.813	0.5699 2.814
0.5201 2.813	0.5323 2.826	0.5448 2.820	0.5574 2.815	0.5703 2.813
0.5204 2.818	0.5327 2.821	0.5452 2.818	0.5578 2.809	0.5707 2.813
0.5208 2.820	0.5331 2.820	0.5455 2.813	0.5582 2.813	0.5711 2.814
0.5212 2.820	0.5335 2.812	0.5459 2.815	0.5586 2.812	0.5715 2.810
0.5220 2.821	0.5339 2.813	0.5463 2.817	0.5590 2.812	0.5719 2.814
0.5227 2.820	0.5343 2.814	0.5467 2.810	0.5594 2.817	0.5722 2.809
0.5231 2.817	0.5346 2.815	0.5471 2.808	0.5599 2.819	0.5728 2.818
0.5235 2.826	0.5350 2.819	0.5475 2.807	0.5611 2.817	0.5734 2.816
0.5239 2.823	0.5354 2.821	0.5478 2.804	0.5615 2.819	0.5738 2.817
0.5243 2.827	0.5358 2.825	0.5482 2.803	0.5621 2.816	0.5742 2.820
0.5247 2.834	0.5362 2.829	0.5486 2.807	0.5626 2.819	0.5745 2.821
0.5251 2.843	0.5366 2.825	0.5490 2.811	0.5630 2.820	0.5749 2.817
0.5254 2.849	0.5370 2.830	0.5494 2.819	0.5634 2.817	0.5753 2.823
0.5258 2.845	0.5373 2.839	0.5498 2.822	0.5638 2.824	0.5757 2.821
0.5262 2.856	0.5377 2.839	0.5501 2.820	0.5642 2.830	0.5761 2.814
0.5268 2.860	0.5381 2.841	0.5507 2.824	0.5648 2.823	0.5765 2.812
0.5274 2.861	0.5385 2.845	0.5515 2.823	0.5653 2.828	0.5768 2.811
0.5277 2.861	0.5389 2.839	0.5523 2.823	0.5657 2.822	0.5772 2.812
0.5281 2.857	0.5411 2.825	0.5528 2.825	0.5661 2.821	0.5776 2.816
0.5287 2.855	0.5417 2.821	0.5532 2.825	0.5665 2.821	0.5780 2.825
0.5293 2.852	0.5421 2.819	0.5536 2.821	0.5671 2.814	0.5784 2.822
0.5297 2.848	0.5425 2.828	0.5540 2.826	0.5678 2.817	0.5788 2.824
0.5302 2.849	0.5429 2.823	0.5548 2.827	0.5684 2.811	0.5793 2.811
0.5308 2.842	0.5432 2.828	0.5555 2.816	0.5688 2.818	0.5805 2.808
0.5312 2.836	0.5436 2.819	0.5581 2.816	0.5692 2.817	0.5814 2.806

0.5818 2.811	0.6044 2.801	0.6290 2.794	0.6557 2.780	0.6842 2.805
0.5822 2.809	0.6048 2.796	0.6295 2.802	0.6575 2.786	0.6848 2.786
0.5827 2.815	0.6052 2.795	0.6301 2.793	0.6580 2.785	0.6853 2.814
0.5835 2.825	0.6056 2.792	0.6305 2.787	0.6585 2.796	0.6858 2.812
0.5841 2.824	0.6060 2.792	0.6310 2.778	0.6591 2.793	0.6862 2.820
0.5845 2.824	0.6065 2.796	0.6315 2.778	0.6595 2.802	0.6868 2.818
0.5849 2.820	0.6071 2.801	0.6319 2.788	0.6600 2.796	0.6876 2.820
0.5852 2.820	0.6077 2.800	0.6324 2.782	0.6608 2.795	0.6881 2.816
0.5856 2.830	0.6092 2.808	0.6329 2.798	0.6612 2.826	0.6887 2.820
0.5860 2.835	0.6098 2.812	0.6333 2.801	0.6617 2.824	2453771+
0.5866 2.828	0.6103 2.813	0.6338 2.800	0.6621 2.825	0.5748 2.841
0.5873 2.824	0.6107 2.818	0.6342 2.815	0.6627 2.818	0.5765 2.828
0.5879 2.820	0.6112 2.816	0.6348 2.810	0.6634 2.814	0.5769 2.837
0.5883 2.823	0.6117 2.813	0.6353 2.812	0.6641 2.802	0.5773 2.853
0.5887 2.824	0.6121 2.816	0.6358 2.816	0.6647 2.818	0.5778 2.845
0.5891 2.816	0.6126 2.823	0.6363 2.820	0.6652 2.816	0.5784 2.833
0.5895 2.818	0.6130 2.810	0.6368 2.805	0.6658 2.802	0.5788 2.836
0.5898 2.817	0.6135 2.806	0.6408 2.813	0.6663 2.800	0.5792 2.838
0.5904 2.815	0.6140 2.816	0.6413 2.820	0.6667 2.802	0.5796 2.834
0.5912 2.817	0.6144 2.813	0.6417 2.784	0.6672 2.796	0.5808 2.817
0.5918 2.813	0.6149 2.802	0.6422 2.791	0.6677 2.791	0.5818 2.828
0.5921 2.813	0.6153 2.812	0.6427 2.791	0.6681 2.774	0.5823 2.849
0.5925 2.820	0.6158 2.811	0.6431 2.797	0.6686 2.769	0.5834 2.848
0.5929 2.812	0.6163 2.807	0.6436 2.795	0.6691 2.760	0.5838 2.834
0.5935 2.805	0.6174 2.773	0.6440 2.789	0.6698 2.776	0.5842 2.852
0.5941 2.803	0.6179 2.778	0.6445 2.782	0.6703 2.790	0.5846 2.846
0.5944 2.796	0.6185 2.781	0.6450 2.785	0.6708 2.800	0.5850 2.846
0.5948 2.802	0.6192 2.803	0.6454 2.776	0.6715 2.794	0.5859 2.865
0.5952 2.805	0.6198 2.806	0.6459 2.794	0.6721 2.806	0.5865 2.859
0.5958 2.814	0.6203 2.796	0.6464 2.803	0.6733 2.811	0.5871 2.866
0.5966 2.811	0.6208 2.795	0.6468 2.814	0.6742 2.805	0.5876 2.841
0.5973 2.818	0.6213 2.805	0.6473 2.798	0.6746 2.805	0.5884 2.838
0.5979 2.818	0.6218 2.816	0.6478 2.816	0.6754 2.814	0.5887 2.857
0.5983 2.816	0.6222 2.822	0.6484 2.820	0.6760 2.812	0.5891 2.846
0.5987 2.820	0.6227 2.809	0.6488 2.816	0.6768 2.819	0.5901 2.830
0.5991 2.819	0.6232 2.820	0.6493 2.817	0.6774 2.814	0.5908 2.849
0.5994 2.823	0.6236 2.820	0.6497 2.822	0.6785 2.808	0.5914 2.841
0.5998 2.812	0.6241 2.826	0.6502 2.821	0.6792 2.800	0.5919 2.849
0.6006 2.819	0.6247 2.819	0.6507 2.823	0.6797 2.791	0.5929 2.824
0.6009 2.823	0.6252 2.826	0.6511 2.826	0.6801 2.793	0.5943 2.833
0.6014 2.821	0.6256 2.827	0.6518 2.822	0.6806 2.812	0.5948 2.850
0.6017 2.816	0.6261 2.825	0.6524 2.821	0.6810 2.791	0.5952 2.854
0.6021 2.808	0.6265 2.832	0.6530 2.816	0.6815 2.783	0.5961 2.852
0.6025 2.812	0.6270 2.822	0.6537 2.794	0.6819 2.761	0.5967 2.849
0.6029 2.810	0.6275 2.811	0.6542 2.790	0.6824 2.766	0.5971 2.858
0.6033 2.810	0.6280 2.796	0.6546 2.781	0.6832 2.776	0.5975 2.864
0.6039 2.805	0.6285 2.799	0.6551 2.796	0.6838 2.791	0.5982 2.871

0.5986 2.864	0.6223 2.827	0.6441 2.780	0.6665 2.829	0.6892 2.836
0.5991 2.867	0.6231 2.865	0.6445 2.785	0.6672 2.811	0.6896 2.826
0.5997 2.857	0.6235 2.849	0.6449 2.777	0.6676 2.820	0.6900 2.803
0.6003 2.857	0.6240 2.864	0.6453 2.796	0.6680 2.801	0.6904 2.815
0.6009 2.859	0.6246 2.837	0.6458 2.818	0.6688 2.797	0.6909 2.793
0.6012 2.868	0.6250 2.851	0.6464 2.815	0.6691 2.806	0.6922 2.772
0.6016 2.841	0.6254 2.846	0.6468 2.812	0.6695 2.796	0.6926 2.794
0.6020 2.844	0.6261 2.843	0.6472 2.814	0.6699 2.795	0.6934 2.802
0.6024 2.843	0.6265 2.829	0.6476 2.817	0.6704 2.765	0.6937 2.813
0.6028 2.858	0.6272 2.849	0.6479 2.818	0.6710 2.779	0.6941 2.783
0.6031 2.832	0.6280 2.832	0.6483 2.829	0.6720 2.784	0.6945 2.798
0.6035 2.833	0.6284 2.822	0.6487 2.827	0.6729 2.786	0.6949 2.792
0.6039 2.836	0.6289 2.820	0.6493 2.831	0.6733 2.799	0.6952 2.790
0.6045 2.843	0.6295 2.811	0.6498 2.838	0.6737 2.817	0.6956 2.782
0.6053 2.832	0.6299 2.795	0.6502 2.839	0.6741 2.819	0.6962 2.788
0.6058 2.824	0.6303 2.778	0.6506 2.822	0.6745 2.818	0.6969 2.786
0.6062 2.818	0.6307 2.775	0.6510 2.834	0.6748 2.839	0.6979 2.761
0.6065 2.825	0.6311 2.781	0.6515 2.822	0.6752 2.832	0.6989 2.769
0.6069 2.812	0.6314 2.795	0.6530 2.821	0.6756 2.822	0.6994 2.780
0.6077 2.827	0.6318 2.815	0.6536 2.824	0.6760 2.814	0.6998 2.769
0.6084 2.837	0.6322 2.817	0.6540 2.830	0.6764 2.819	0.7002 2.788
0.6088 2.847	0.6332 2.825	0.6544 2.812	0.6767 2.832	0.7006 2.803
0.6092 2.845	0.6335 2.818	0.6547 2.818	0.6771 2.840	0.7009 2.806
0.6100 2.871	0.6339 2.819	0.6551 2.829	0.6775 2.827	0.7022 2.815
0.6107 2.851	0.6343 2.804	0.6555 2.821	0.6779 2.823	0.7028 2.817
0.6111 2.843	0.6347 2.834	0.6559 2.813	0.6786 2.824	0.7035 2.818
0.6115 2.850	0.6354 2.834	0.6566 2.782	0.6790 2.830	0.7039 2.822
0.6122 2.864	0.6358 2.845	0.6570 2.784	0.6798 2.816	0.7043 2.809
0.6136 2.840	0.6362 2.844	0.6574 2.781	0.6805 2.825	0.7049 2.819
0.6140 2.854	0.6366 2.845	0.6578 2.772	0.6809 2.821	0.7054 2.833
0.6144 2.814	0.6370 2.826	0.6581 2.797	0.6812 2.804	0.7058 2.823
0.6148 2.845	0.6373 2.828	0.6585 2.774	0.6817 2.786	0.7062 2.814
0.6151 2.822	0.6377 2.842	0.6589 2.801	0.6820 2.788	0.7066 2.803
0.6155 2.821	0.6381 2.848	0.6595 2.811	0.6826 2.784	0.7071 2.807
0.6163 2.819	0.6388 2.856	0.6604 2.812	0.6832 2.760	0.7077 2.804
0.6167 2.835	0.6392 2.828	0.6608 2.818	0.6836 2.769	0.7081 2.834
0.6170 2.830	0.6396 2.828	0.6616 2.823	0.6839 2.765	0.7085 2.841
0.6178 2.851	0.6400 2.823	0.6619 2.817	0.6845 2.763	0.7090 2.838
0.6184 2.827	0.6404 2.831	0.6627 2.841	0.6851 2.751	0.7096 2.803
0.6189 2.815	0.6407 2.824	0.6631 2.820	0.6855 2.751	0.7100 2.810
0.6193 2.810	0.6411 2.818	0.6634 2.840	0.6860 2.747	0.7103 2.787
0.6197 2.851	0.6419 2.801	0.6638 2.829	0.6866 2.787	0.7107 2.806
0.6201 2.819	0.6423 2.810	0.6642 2.833	0.6870 2.792	0.7111 2.816
0.6208 2.842	0.6426 2.810	0.6646 2.828	0.6873 2.798	2453773+
0.6212 2.840	0.6430 2.803	0.6650 2.831	0.6877 2.802	0.5194 2.847
0.6216 2.840	0.6434 2.798	0.6653 2.849	0.6881 2.800	0.5199 2.844
0.6220 2.834	0.6438 2.789	0.6657 2.830	0.6887 2.803	0.5205 2.847

0.5210 2.839	0.5451 2.814	0.5703 2.804	0.5947 2.779	0.6215 2.805
0.5215 2.832	0.5456 2.824	0.5707 2.801	0.5952 2.781	0.6220 2.789
0.5220 2.832	0.5461 2.818	0.5712 2.807	0.5957 2.768	0.6225 2.813
0.5224 2.835	0.5466 2.827	0.5717 2.801	0.5963 2.762	0.6230 2.808
0.5229 2.828	0.5472 2.826	0.5723 2.803	0.5969 2.774	0.6235 2.811
0.5234 2.830	0.5476 2.840	0.5727 2.810	0.5974 2.781	0.6241 2.808
0.5240 2.837	0.5482 2.832	0.5732 2.813	0.5980 2.803	0.6247 2.816
0.5246 2.834	0.5488 2.834	0.5737 2.815	0.5984 2.807	0.6252 2.826
0.5251 2.815	0.5493 2.825	0.5741 2.820	0.5991 2.821	0.6258 2.841
0.5255 2.816	0.5498 2.823	0.5746 2.819	0.6000 2.819	0.6263 2.845
0.5261 2.787	0.5503 2.829	0.5752 2.820	0.6005 2.822	0.6268 2.848
0.5266 2.778	0.5511 2.822	0.5757 2.820	0.6009 2.818	0.6273 2.844
0.5272 2.780	0.5517 2.812	0.5762 2.824	0.6014 2.822	0.6278 2.845
0.5277 2.784	0.5522 2.801	0.5767 2.828	0.6019 2.820	0.6283 2.851
0.5282 2.804	0.5527 2.789	0.5773 2.817	0.6023 2.821	0.6287 2.836
0.5287 2.795	0.5531 2.768	0.5777 2.821	0.6029 2.828	0.6292 2.847
0.5292 2.809	0.5537 2.746	0.5782 2.808	0.6036 2.821	0.6297 2.837
0.5299 2.804	0.5542 2.749	0.5788 2.805	0.6042 2.820	0.6303 2.845
0.5304 2.808	0.5547 2.756	0.5793 2.795	0.6047 2.817	0.6309 2.838
0.5308 2.811	0.5552 2.765	0.5797 2.787	0.6051 2.812	0.6314 2.839
0.5313 2.812	0.5559 2.789	0.5803 2.782	0.6056 2.817	0.6320 2.829
0.5318 2.825	0.5564 2.791	0.5808 2.781	0.6072 2.805	0.6325 2.827
0.5323 2.817	0.5569 2.803	0.5813 2.775	0.6077 2.811	0.6334 2.822
0.5329 2.832	0.5573 2.811	0.5818 2.756	0.6082 2.811	0.6339 2.813
0.5333 2.835	0.5578 2.810	0.5822 2.755	0.6088 2.791	0.6344 2.800
0.5338 2.842	0.5583 2.811	0.5829 2.778	0.6092 2.791	0.6351 2.806
0.5344 2.845	0.5587 2.812	0.5838 2.791	0.6097 2.778	0.6358 2.795
0.5353 2.821	0.5592 2.804	0.5844 2.799	0.6102 2.788	0.6362 2.793
0.5358 2.826	0.5598 2.816	0.5849 2.807	0.6106 2.795	0.6367 2.805
0.5362 2.821	0.5603 2.816	0.5855 2.804	0.6111 2.797	0.6371 2.812
0.5367 2.828	0.5607 2.816	0.5860 2.811	0.6117 2.830	0.6377 2.804
0.5372 2.816	0.5614 2.822	0.5866 2.812	0.6123 2.821	0.6382 2.824
0.5377 2.831	0.5619 2.829	0.5871 2.812	0.6129 2.839	0.6387 2.818
0.5383 2.824	0.5625 2.822	0.5876 2.818	0.6134 2.842	0.6392 2.834
0.5387 2.814	0.5629 2.829	0.5880 2.832	0.6139 2.840	0.6399 2.839
0.5392 2.804	0.5634 2.825	0.5885 2.815	0.6144 2.848	0.6404 2.843
0.5397 2.778	0.5639 2.822	0.5890 2.822	0.6150 2.847	0.6409 2.835
0.5404 2.760	0.5643 2.812	0.5894 2.827	0.6156 2.838	0.6415 2.860
0.5409 2.769	0.5648 2.803	0.5899 2.826	0.6161 2.842	0.6420 2.851
0.5414 2.770	0.5653 2.793	0.5905 2.819	0.6174 2.845	0.6426 2.854
0.5418 2.789	0.5659 2.790	0.5910 2.823	0.6179 2.831	0.6432 2.858
0.5423 2.782	0.5667 2.782	0.5915 2.805	0.6185 2.819	0.6439 2.845
0.5428 2.790	0.5676 2.756	0.5921 2.806	0.6190 2.828	0.6444 2.844
0.5432 2.799	0.5681 2.751	0.5926 2.799	0.6194 2.820	0.6449 2.838
0.5437 2.800	0.5688 2.764	0.5932 2.801	0.6201 2.812	0.6454 2.843
0.5442 2.805	0.5693 2.792	0.5936 2.787	0.6205 2.811	0.6460 2.836
0.5447 2.814	0.5698 2.786	0.5941 2.779	0.6210 2.806	0.6464 2.824

0.6469 2.817	0.6736 2.798	0.4365 2.794	0.4576 2.862	0.4765 2.826
0.6474 2.812	0.6742 2.788	0.4369 2.783	0.4580 2.860	0.4769 2.812
0.6478 2.812	0.6748 2.761	0.4376 2.782	0.4584 2.860	0.4772 2.817
0.6484 2.795	0.6753 2.748	0.4384 2.798	0.4587 2.864	0.4776 2.817
0.6494 2.800	0.6757 2.757	0.4388 2.799	0.4591 2.859	0.4780 2.818
0.6499 2.808	0.6763 2.763	0.4392 2.819	0.4595 2.860	0.4784 2.802
0.6504 2.817	0.6768 2.779	0.4395 2.824	0.4599 2.854	0.4788 2.783
0.6508 2.814	0.6774 2.783	0.4399 2.845	0.4603 2.849	0.4792 2.782
0.6514 2.819	0.6779 2.802	0.4403 2.847	0.4607 2.837	0.4795 2.796
0.6519 2.825	0.6783 2.800	0.4407 2.851	0.4610 2.831	0.4799 2.816
0.6524 2.826	0.6789 2.809	0.4411 2.845	0.4614 2.815	0.4803 2.818
0.6530 2.826	0.6794 2.802	0.4417 2.851	0.4618 2.824	0.4807 2.818
0.6538 2.839	0.6799 2.802	0.4424 2.831	0.4622 2.813	0.4812 2.846
0.6544 2.849	0.6804 2.810	0.4430 2.851	0.4626 2.818	0.4818 2.856
0.6549 2.852	0.6816 2.794	0.4436 2.858	0.4629 2.818	0.4822 2.855
0.6555 2.845	0.6821 2.806	0.4443 2.880	0.4633 2.821	0.4830 2.853
0.6559 2.839	0.6826 2.809	0.4449 2.872	0.4637 2.808	0.4834 2.855
0.6564 2.839	0.6832 2.805	0.4453 2.866	0.4641 2.801	0.4837 2.850
0.6570 2.824	0.6837 2.812	0.4458 2.869	0.4645 2.785	0.4841 2.850
0.6575 2.825	0.6841 2.803	0.4464 2.840	0.4649 2.783	0.4845 2.848
0.6581 2.834	0.6846 2.805	0.4468 2.849	0.4653 2.790	0.4851 2.849
0.6586 2.834	0.6851 2.799	0.4472 2.832	0.4656 2.799	0.4857 2.851
0.6590 2.811	0.6855 2.793	0.4476 2.820	0.4660 2.809	0.4860 2.867
0.6595 2.815	0.6861 2.787	0.4480 2.814	0.4664 2.821	0.4864 2.849
0.6600 2.816	0.6866 2.790	0.4483 2.810	0.4668 2.835	0.4868 2.868
0.6605 2.806	0.6871 2.782	0.4487 2.804	0.4671 2.835	0.4872 2.857
0.6613 2.782	0.6875 2.782	0.4496 2.822	0.4675 2.832	0.4876 2.854
0.6619 2.775	0.6880 2.794	0.4500 2.810	0.4679 2.849	0.4879 2.843
0.6625 2.783	0.6886 2.776	0.4503 2.790	0.4683 2.848	0.4892 2.833
0.6631 2.793	2453797 +	0.4507 2.787	0.4692 2.840	0.4896 2.820
0.6635 2.798	0.4300 2.855	0.4511 2.766	0.4696 2.861	0.4900 2.820
0.6641 2.799	0.4304 2.846	0.4515 2.778	0.4700 2.861	0.4903 2.826
0.6648 2.808	0.4308 2.843	0.4519 2.789	0.4704 2.876	0.4907 2.827
0.6656 2.814	0.4311 2.858	0.4522 2.814	0.4707 2.863	0.4911 2.823
0.6663 2.823	0.4315 2.872	0.4526 2.811	0.4711 2.856	0.4915 2.821
0.6670 2.823	0.4319 2.862	0.4530 2.824	0.4715 2.863	0.4919 2.819
0.6676 2.827	0.4323 2.850	0.4534 2.836	0.4719 2.863	0.4922 2.823
0.6681 2.836	0.4327 2.835	0.4538 2.840	0.4723 2.868	0.4926 2.798
0.6687 2.821	0.4331 2.842	0.4542 2.852	0.4727 2.866	0.4934 2.811
0.6692 2.831	0.4334 2.827	0.4545 2.844	0.4730 2.867	0.4938 2.806
0.6698 2.833	0.4338 2.816	0.4549 2.848	0.4734 2.859	0.4942 2.815
0.6704 2.818	0.4342 2.799	0.4553 2.852	0.4738 2.852	0.4945 2.816
0.6709 2.809	0.4346 2.793	0.4557 2.847	0.4742 2.849	0.4949 2.831
0.6715 2.822	0.4350 2.799	0.4561 2.848	0.4746 2.838	0.4953 2.845
0.6720 2.815	0.4354 2.805	0.4564 2.857	0.4751 2.831	0.4957 2.839
0.6725 2.804	0.4357 2.798	0.4568 2.861	0.4757 2.834	0.4961 2.839
0.6730 2.787	0.4361 2.809	0.4572 2.860	0.4761 2.830	0.4968 2.838

0.4972 2.847	0.5175 2.819	0.5388 2.843	0.5583 2.835	0.5797 2.838
0.4980 2.858	0.5178 2.833	0.5392 2.847	0.5587 2.828	0.5800 2.841
0.4984 2.856	0.5182 2.810	0.5396 2.839	0.5591 2.826	0.5804 2.838
0.4991 2.837	0.5186 2.816	0.5402 2.849	0.5595 2.813	0.5808 2.840
0.4997 2.852	0.5190 2.824	0.5408 2.839	0.5598 2.802	0.5812 2.833
0.5003 2.857	0.5194 2.819	0.5415 2.864	0.5602 2.816	0.5816 2.834
0.5006 2.858	0.5197 2.810	0.5419 2.847	0.5606 2.806	0.5821 2.844
0.5010 2.845	0.5203 2.786	0.5427 2.855	0.5610 2.799	0.5827 2.860
0.5014 2.852	0.5209 2.768	0.5430 2.844	0.5616 2.796	0.5831 2.854
0.5018 2.852	0.5213 2.778	0.5434 2.850	0.5621 2.773	0.5835 2.847
0.5022 2.852	0.5217 2.793	0.5438 2.847	0.5627 2.778	0.5839 2.848
0.5026 2.832	0.5220 2.800	0.5442 2.845	0.5633 2.817	0.5842 2.839
0.5029 2.835	0.5224 2.812	0.5446 2.851	0.5637 2.808	0.5846 2.840
0.5033 2.813	0.5228 2.831	0.5450 2.835	0.5640 2.807	0.5850 2.843
0.5037 2.817	0.5232 2.831	0.5453 2.811	0.5644 2.813	0.5854 2.833
0.5041 2.827	0.5236 2.835	0.5457 2.812	0.5648 2.834	0.5858 2.828
0.5045 2.822	0.5239 2.834	0.5461 2.810	0.5652 2.829	0.5861 2.819
0.5048 2.815	0.5243 2.832	0.5465 2.812	0.5660 2.837	0.5867 2.806
0.5052 2.816	0.5247 2.831	0.5470 2.793	0.5663 2.853	0.5873 2.799
0.5056 2.802	0.5251 2.832	0.5476 2.775	0.5678 2.847	0.5877 2.792
0.5060 2.799	0.5255 2.845	0.5480 2.759	0.5682 2.843	0.5881 2.790
0.5064 2.784	0.5259 2.845	0.5484 2.760	0.5686 2.830	0.5884 2.796
0.5068 2.786	0.5262 2.843	0.5488 2.770	0.5690 2.848	0.5888 2.787
0.5071 2.793	0.5266 2.845	0.5492 2.782	0.5693 2.862	0.5892 2.776
0.5075 2.797	0.5283 2.858	0.5495 2.783	0.5697 2.845	0.5896 2.777
0.5079 2.808	0.5289 2.853	0.5499 2.802	0.5700 2.855	0.5903 2.772
0.5083 2.821	0.5293 2.834	0.5503 2.813	0.5705 2.847	0.5907 2.788
0.5087 2.823	0.5297 2.841	0.5507 2.809	0.5709 2.852	0.5911 2.789
0.5090 2.829	0.5301 2.841	0.5511 2.813	0.5712 2.842	0.5915 2.803
0.5094 2.849	0.5304 2.830	0.5514 2.827	0.5716 2.847	0.5919 2.803
0.5098 2.832	0.5308 2.840	0.5518 2.831	0.5720 2.831	0.5923 2.803
0.5102 2.843	0.5312 2.843	0.5522 2.840	0.5724 2.830	0.5926 2.815
0.5106 2.842	0.5320 2.822	0.5526 2.840	0.5728 2.825	0.5930 2.816
0.5110 2.843	0.5323 2.812	0.5530 2.834	0.5732 2.831	0.5934 2.832
0.5113 2.844	0.5327 2.798	0.5534 2.828	0.5735 2.800	0.5938 2.818
0.5117 2.848	0.5331 2.797	0.5537 2.833	0.5739 2.810	0.5942 2.827
0.5121 2.852	0.5335 2.807	0.5541 2.832	0.5743 2.804	0.5945 2.825
0.5125 2.863	0.5339 2.784	0.5545 2.838	0.5747 2.815	0.5949 2.832
0.5129 2.852	0.5343 2.773	0.5549 2.850	0.5752 2.793	0.5953 2.822
0.5133 2.857	0.5348 2.746	0.5553 2.840	0.5762 2.783	0.5957 2.821
0.5136 2.860	0.5354 2.777	0.5556 2.844	0.5768 2.793	0.5961 2.815
0.5140 2.853	0.5358 2.806	0.5560 2.842	0.5774 2.819	0.5966 2.827
0.5146 2.857	0.5362 2.805	0.5564 2.842	0.5777 2.817	0.5972 2.826
0.5152 2.858	0.5365 2.815	0.5568 2.837	0.5781 2.822	0.5976 2.831
0.5155 2.850	0.5369 2.806	0.5572 2.848	0.5785 2.819	0.5980 2.838
0.5159 2.851	0.5375 2.825	0.5576 2.836	0.5789 2.825	0.5984 2.832
0.5167 2.832	0.5385 2.835	0.5579 2.842	0.5793 2.827	0.5989 2.820

0.5995 2.831	0.6190 2.793	0.6407 2.849	0.6645 2.868	0.4982 2.834
0.5999 2.816	0.6196 2.825	0.6412 2.850	0.6649 2.872	0.4986 2.835
0.6003 2.802	0.6202 2.849	0.6418 2.836	0.6653 2.863	0.4990 2.841
0.6007 2.810	0.6206 2.834	0.6425 2.834	0.6657 2.865	0.4994 2.857
0.6010 2.806	0.6213 2.814	0.6431 2.810	2453801+	0.5001 2.852
0.6014 2.795	0.6217 2.834	0.6435 2.821	0.4806 2.784	0.5004 2.839
0.6018 2.790	0.6221 2.828	0.6439 2.818	0.4810 2.777	0.5008 2.828
0.6022 2.785	0.6225 2.841	0.6442 2.830	0.4816 2.796	0.5012 2.843
0.6026 2.790	0.6229 2.835	0.6446 2.830	0.4822 2.816	0.5016 2.855
0.6029 2.787	0.6232 2.847	0.6468 2.826	0.4828 2.809	0.5020 2.851
0.6033 2.774	0.6238 2.857	0.6473 2.841	0.4833 2.830	0.5024 2.843
0.6037 2.766	0.6245 2.856	0.6477 2.836	0.4841 2.829	0.5027 2.836
0.6041 2.773	0.6251 2.832	0.6481 2.860	0.0043 2.817	0.5035 2.833
0.6045 2.789	0.6255 2.840	0.6485 2.844	0.4848 2.843	0.5039 2.826
0.6049 2.782	0.6259 2.841	0.6488 2.853	0.4852 2.853	0.5043 2.801
0.6052 2.801	0.6263 2.844	0.6492 2.862	0.4856 2.841	0.5047 2.796
0.6056 2.798	0.6267 2.854	0.6496 2.849	0.4860 2.849	0.5050 2.771
0.6068 2.814	0.6271 2.856	0.6500 2.864	0.4864 2.844	0.5054 2.780
0.6072 2.818	0.6274 2.848	0.6504 2.862	0.4868 2.859	0.5058 2.777
0.6076 2.824	0.6278 2.832	0.6508 2.867	0.4871 2.857	0.5062 2.794
0.6080 2.816	0.6282 2.841	0.6517 2.858	0.4875 2.856	0.5066 2.779
0.6083 2.822	0.6286 2.833	0.6525 2.861	0.4879 2.861	0.5070 2.797
0.6087 2.820	0.6290 2.813	0.6531 2.859	0.4883 2.846	0.5075 2.800
0.6091 2.827	0.6293 2.809	0.6534 2.885	0.4887 2.847	0.5084 2.786
0.6095 2.823	0.6297 2.812	0.6538 2.884	0.4890 2.845	0.5092 2.793
0.6099 2.832	0.6301 2.798	0.6542 2.858	0.4894 2.836	0.5096 2.799
0.6102 2.828	0.6305 2.803	0.6546 2.864	0.4898 2.827	0.5100 2.793
0.6106 2.840	0.6309 2.804	0.6550 2.848	0.4902 2.829	0.5104 2.806
0.6110 2.837	0.6313 2.808	0.6553 2.871	0.4906 2.826	0.5108 2.828
0.6114 2.840	0.6316 2.813	0.6559 2.872	0.4908 2.807	0.5112 2.830
0.6118 2.829	0.6320 2.800	0.6566 2.849	0.4913 2.798	0.5115 2.825
0.6122 2.840	0.6324 2.804	0.6573 2.835	0.4917 2.792	0.5119 2.842
0.6125 2.827	0.6328 2.806	0.6579 2.822	0.4921 2.789	0.5123 2.843
0.6129 2.832	0.6332 2.816	0.6584 2.829	0.4925 2.786	0.5127 2.849
0.6133 2.816	0.6335 2.831	0.6588 2.818	0.4929 2.798	0.5131 2.845
0.6137 2.829	0.6339 2.837	0.6595 2.823	0.4933 2.803	0.5135 2.834
0.6141 2.822	0.6349 2.852	0.6599 2.828	0.4936 2.798	0.5138 2.831
0.6147 2.813	0.6355 2.849	0.6603 2.820	0.4940 2.784	0.5142 2.838
0.6152 2.811	0.6358 2.836	0.6609 2.816	0.4944 2.790	0.5146 2.839
0.6156 2.797	0.6362 2.849	0.6615 2.840	0.4948 2.796	0.5150 2.841
0.6160 2.797	0.6366 2.840	0.6618 2.828	0.4952 2.793	0.5154 2.832
0.6164 2.793	0.6374 2.846	0.6622 2.828	0.4959 2.797	0.5157 2.834
0.6167 2.790	0.6377 2.841	0.6626 2.829	0.4963 2.809	0.5161 2.837
0.6173 2.791	0.6385 2.854	0.6630 2.852	0.4967 2.832	0.5165 2.837
0.6179 2.801	0.6389 2.853	0.6634 2.849	0.4971 2.827	0.5169 2.836
0.6183 2.792	0.6394 2.846	0.6638 2.851	0.4975 2.828	0.5173 2.815
0.6187 2.803	0.6400 2.851	0.6641 2.860	0.4978 2.845	0.5177 2.813

0.5180 2.803	0.5525 2.823	0.5810 2.826	0.6030 2.807	0.6237 2.836
0.5184 2.803	0.5529 2.806	0.5814 2.826	0.6036 2.803	0.6240 2.816
0.5188 2.788	0.5541 2.836	0.5818 2.812	0.6042 2.789	0.6244 2.834
0.5198 2.789	0.5550 2.851	0.5825 2.811	0.6045 2.800	0.6248 2.840
0.5203 2.802	0.5560 2.844	0.5831 2.816	0.6049 2.803	0.6252 2.837
0.5207 2.802	0.5569 2.819	0.5841 2.836	0.6053 2.804	0.6256 2.831
0.5211 2.792	0.5574 2.827	0.5852 2.836	0.6057 2.807	0.6260 2.828
0.5215 2.809	0.5580 2.827	0.5864 2.847	0.6061 2.795	0.6263 2.840
0.5219 2.821	0.5594 2.822	0.5867 2.838	0.6065 2.819	0.6267 2.832
0.5223 2.805	0.5598 2.831	0.5871 2.846	0.6068 2.804	0.6271 2.843
0.5226 2.807	0.5602 2.826	0.5875 2.837	0.6072 2.812	0.6275 2.838
0.5230 2.807	0.5608 2.805	0.5879 2.838	0.6076 2.813	0.6279 2.829
0.5234 2.807	0.5613 2.815	0.5883 2.814	0.6080 2.822	0.6283 2.832
0.5240 2.811	0.5617 2.826	0.5886 2.801	0.6084 2.828	0.6286 2.834
0.5246 2.827	0.5623 2.814	0.5890 2.809	0.6087 2.830	0.6290 2.823
0.5251 2.835	0.5631 2.823	0.5894 2.816	0.6091 2.828	0.6294 2.819
0.5261 2.836	0.5636 2.820	0.5898 2.808	0.6100 2.841	0.6298 2.818
0.5277 2.835	0.5642 2.805	0.5902 2.802	0.6107 2.831	0.6302 2.810
0.5303 2.803	0.5650 2.811	0.5906 2.812	0.6112 2.840	0.6305 2.794
0.5307 2.816	0.5657 2.826	0.5909 2.819	0.6118 2.834	0.6309 2.805
0.5311 2.813	0.5663 2.832	0.5913 2.829	0.6122 2.830	0.6315 2.796
0.5314 2.807	0.5667 2.836	0.5917 2.820	0.6126 2.839	0.6321 2.798
0.5318 2.806	0.5671 2.829	0.5921 2.806	0.6130 2.831	0.6325 2.791
0.5324 2.793	0.5675 2.845	0.5925 2.809	0.6133 2.833	0.6328 2.786
0.5330 2.781	0.5678 2.824	0.5929 2.820	0.6137 2.840	0.6332 2.799
0.5338 2.790	0.5686 2.833	0.5932 2.817	0.6141 2.845	0.6336 2.806
0.5351 2.793	0.5694 2.826	0.5936 2.829	0.6145 2.838	0.6340 2.801
0.5402 2.823	0.5698 2.846	0.5944 2.825	0.6149 2.839	0.6344 2.796
0.5408 2.836	0.5705 2.847	0.5948 2.825	0.6152 2.837	0.6348 2.797
0.5416 2.844	0.5709 2.845	0.5951 2.828	0.6156 2.825	0.6351 2.808
0.5423 2.845	0.5713 2.846	0.5955 2.836	0.6160 2.812	0.6355 2.811
0.5433 2.827	0.5717 2.873	0.5959 2.837	0.6164 2.817	0.6359 2.823
0.5439 2.845	0.5727 2.850	0.5963 2.842	0.6170 2.805	0.6363 2.822
0.5444 2.832	0.5740 2.813	0.5967 2.838	0.6175 2.806	0.6367 2.830
0.5448 2.826	0.5743 2.815	0.5971 2.841	0.6179 2.799	0.6370 2.831
0.5452 2.830	0.5747 2.817	0.5974 2.850	0.6191 2.791	0.6374 2.835
0.5456 2.817	0.5753 2.820	0.5978 2.842	0.6195 2.812	0.6378 2.847
0.5460 2.833	0.5759 2.815	0.5987 2.837	0.6198 2.789	0.6388 2.838
0.5465 2.812	0.5763 2.819	0.5996 2.833	0.6202 2.797	0.6392 2.833
0.5471 2.827	0.5768 2.818	0.6000 2.837	0.6206 2.786	0.6396 2.840
0.5477 2.819	0.5774 2.814	0.6003 2.832	0.6210 2.807	0.6399 2.833
0.5483 2.801	0.5778 2.815	0.6007 2.832	0.6214 2.810	0.6403 2.830
0.5491 2.815	0.5782 2.822	0.6011 2.820	0.6218 2.813	0.6407 2.836
0.5501 2.820	0.5795 2.825	0.6015 2.833	0.6221 2.814	0.6411 2.839
0.5509 2.832	0.5798 2.820	0.6019 2.826	0.6225 2.826	0.6415 2.829
0.5513 2.817	0.5802 2.821	0.6022 2.824	0.6229 2.834	0.6419 2.838
0.5521 2.814	0.5806 2.824	0.6026 2.806	0.6233 2.814	0.6422 2.823

0.6426 2.831	0.6625 2.832	0.2913 2.874	0.3175 2.875	0.3433 2.863
0.6430 2.821	0.6629 2.828	0.2919 2.865	0.3180 2.876	0.3437 2.859
0.6434 2.818	0.6636 2.829	0.2930 2.857	0.3184 2.868	0.3442 2.865
0.6438 2.806	0.6640 2.836	0.2935 2.856	0.3189 2.870	0.3446 2.871
0.6441 2.792	0.6644 2.841	0.2942 2.850	0.3194 2.861	0.3452 2.872
0.6445 2.782	0.6648 2.823	0.2947 2.844	0.3202 2.856	0.3458 2.868
0.6449 2.788	0.6652 2.845	0.2952 2.856	0.3207 2.843	0.3465 2.862
0.6453 2.803	0.6655 2.846	0.2957 2.836	0.3213 2.838	0.3474 2.842
0.6457 2.788	0.6659 2.836	0.2962 2.839	0.3221 2.834	0.3478 2.840
0.6461 2.798	0.6667 2.836	0.2968 2.844	0.3227 2.833	0.3484 2.828
0.6466 2.806	0.6671 2.822	0.2974 2.833	0.3231 2.829	0.3490 2.816
0.6472 2.815	0.6678 2.827	0.2979 2.850	0.3237 2.836	0.3495 2.821
0.6478 2.811	0.6682 2.826	0.2986 2.845	0.3244 2.834	0.3499 2.821
0.6484 2.808	0.6686 2.847	0.2991 2.862	0.3249 2.832	0.3504 2.823
0.6487 2.829	0.6690 2.839	0.2995 2.861	0.3255 2.835	0.3509 2.823
0.6491 2.846	0.6696 2.842	0.3002 2.874	0.3261 2.840	0.3515 2.836
0.6495 2.825	0.6701 2.842	0.3010 2.880	0.3266 2.843	0.3521 2.837
0.6499 2.830	0.6705 2.839	0.3017 2.884	0.3271 2.855	0.3526 2.829
0.6503 2.824	0.6709 2.839	0.3022 2.880	0.3278 2.856	0.3532 2.840
0.6506 2.829	0.6713 2.836	0.3026 2.874	0.3283 2.857	0.3538 2.849
0.6510 2.838	0.6716 2.845	0.3031 2.883	0.3287 2.872	0.3543 2.852
0.6514 2.838	0.6720 2.829	0.3036 2.887	0.3292 2.855	0.3548 2.847
0.6518 2.844	0.6724 2.836	0.3043 2.878	0.3296 2.873	0.3553 2.862
0.6522 2.840	0.6728 2.830	0.3050 2.885	0.3302 2.867	0.3559 2.862
0.6526 2.847	0.6732 2.839	0.3056 2.868	0.3308 2.872	0.3564 2.865
0.6529 2.843	0.6736 2.862	0.3061 2.856	0.3317 2.868	0.3569 2.866
0.6533 2.838	0.6740 2.852	0.3066 2.855	0.3323 2.867	0.3573 2.861
0.6537 2.840	0.6743 2.869	0.3070 2.866	0.3328 2.859	0.3578 2.864
0.6541 2.852	0.6747 2.856	0.3075 2.854	0.3333 2.833	0.3584 2.863
0.6545 2.836	0.6751 2.851	0.3079 2.858	0.3337 2.829	0.3588 2.863
0.6549 2.832	0.6755 2.830	0.3084 2.848	0.3342 2.830	0.3593 2.849
0.6552 2.838	0.6761 2.832	0.3089 2.838	0.3347 2.823	0.3598 2.856
0.6556 2.819	0.6766 2.821	0.3096 2.843	0.3355 2.822	0.3604 2.846
0.6560 2.829	0.6770 2.846	0.3101 2.818	0.3360 2.830	0.3610 2.855
0.6564 2.818	0.6774 2.846	0.3105 2.833	0.3365 2.827	0.3615 2.847
0.6568 2.829	2453802	0.3110 2.842	0.3369 2.823	0.3629 2.815
0.6571 2.817	0.2849 2.890	0.3114 2.851	0.3374 2.822	0.3633 2.804
0.6575 2.804	0.2855 2.887	0.3119 2.842	0.3378 2.819	0.3639 2.832
0.6587 2.820	0.2861 2.889	0.3123 2.844	0.3384 2.828	0.3644 2.820
0.6594 2.819	0.2866 2.886	0.3129 2.848	0.3391 2.835	0.3649 2.819
0.6598 2.827	0.2872 2.884	0.3134 2.867	0.3396 2.839	0.3654 2.828
0.6602 2.834	0.2877 2.886	0.3138 2.865	0.3401 2.852	0.3659 2.827
0.6606 2.830	0.2881 2.892	0.3143 2.872	0.3406 2.856	0.3663 2.832
0.6609 2.836	0.2887 2.882	0.3148 2.878	0.3412 2.860	0.3668 2.839
0.6613 2.821	0.2894 2.891	0.3154 2.859	0.3419 2.857	0.3673 2.838
0.6617 2.827	0.2900 2.900	0.3163 2.870	0.3424 2.866	0.3677 2.843
0.6621 2.828	0.2907 2.898	0.3169 2.871	0.3428 2.866	0.3682 2.848

0.3686 2.858	0.3935 2.815	0.4179 2.829	0.4454 2.836	0.4694 2.827
0.3692 2.864	0.3944 2.836	0.4186 2.822	0.4459 2.826	0.4698 2.834
0.3697 2.859	0.3950 2.844	0.4192 2.822	0.4465 2.830	0.4703 2.828
0.3701 2.857	0.3955 2.840	0.4197 2.828	0.4470 2.830	0.4707 2.825
0.3706 2.853	0.3960 2.851	0.4202 2.818	0.4476 2.828	0.4712 2.834
0.3710 2.864	0.3966 2.843	0.4207 2.819	0.4480 2.836	0.4716 2.828
0.3716 2.871	0.3972 2.849	0.4212 2.823	0.4486 2.828	0.4721 2.818
0.3722 2.861	0.3976 2.840	0.4218 2.820	0.4491 2.829	0.4726 2.823
0.3727 2.859	0.3981 2.852	0.4222 2.811	0.4496 2.833	0.4730 2.817
0.3731 2.849	0.3986 2.855	0.4227 2.820	0.4500 2.827	0.4735 2.812
0.3736 2.855	0.3992 2.848	0.4233 2.817	0.4505 2.830	0.4739 2.817
0.3743 2.847	0.3997 2.852	0.4239 2.823	0.4509 2.839	0.4744 2.808
0.3748 2.846	0.4002 2.850	0.4246 2.821	0.4514 2.834	0.4748 2.816
0.3753 2.838	0.4007 2.846	0.4253 2.846	0.4520 2.837	0.4756 2.821
0.3758 2.824	0.4012 2.851	0.4258 2.836	0.4525 2.834	0.4761 2.816
0.3763 2.818	0.4017 2.848	0.4263 2.834	0.4529 2.832	0.4765 2.830
0.3768 2.813	0.4022 2.846	0.4267 2.837	0.4534 2.839	0.4771 2.826
0.3772 2.817	0.4027 2.837	0.4272 2.828	0.4538 2.844	0.4777 2.835
0.3779 2.815	0.4031 2.844	0.4278 2.834	0.4543 2.850	0.4782 2.831
0.3787 2.827	0.4036 2.828	0.4282 2.827	0.4547 2.850	0.4786 2.831
0.3792 2.829	0.4040 2.829	0.4287 2.835	0.4552 2.843	0.4791 2.836
0.3796 2.831	0.4045 2.836	0.4292 2.843	0.4558 2.840	0.4797 2.838
0.3801 2.837	0.4049 2.827	0.4296 2.827	0.4562 2.832	0.4802 2.840
0.3805 2.829	0.4054 2.824	0.4301 2.838	0.4567 2.843	0.4807 2.836
0.3811 2.839	0.4058 2.827	0.4305 2.827	0.4572 2.840	0.4812 2.841
0.3816 2.844	0.4064 2.832	0.4311 2.826	0.4576 2.836	0.4817 2.850
0.3820 2.856	0.4070 2.829	0.4317 2.822	0.4582 2.827	0.4821 2.847
0.3825 2.855	0.4078 2.827	0.4323 2.828	0.4591 2.836	0.4827 2.836
0.3829 2.853	0.4083 2.830	0.4328 2.817	0.4603 2.817	0.4833 2.827
0.3835 2.859	0.4090 2.825	0.4332 2.823	0.4608 2.819	0.4838 2.822
0.3840 2.859	0.4096 2.830	0.4337 2.817	0.4612 2.823	0.4842 2.825
0.3845 2.860	0.4101 2.835	0.4342 2.824	0.4617 2.819	0.4847 2.823
0.3849 2.862	0.4105 2.844	0.4347 2.823	0.4623 2.827	0.4852 2.822
0.3854 2.864	0.4110 2.847	0.4352 2.822	0.4628 2.820	0.4856 2.816
0.3858 2.857	0.4114 2.840	0.4357 2.823	0.4632 2.825	0.4861 2.821
0.3863 2.847	0.4123 2.840	0.4361 2.817	0.4637 2.833	0.4867 2.826
0.3868 2.855	0.4128 2.849	0.4366 2.812	0.4641 2.835	0.4872 2.796
0.3873 2.849	0.4132 2.845	0.4374 2.820	0.4646 2.836	0.4877 2.810
0.3878 2.849	0.4137 2.839	0.4380 2.828	0.4653 2.835	0.4882 2.811
0.3883 2.837	0.4142 2.841	0.4384 2.828	0.4658 2.841	0.4886 2.813
0.3889 2.836	0.4146 2.834	0.4389 2.835	0.4662 2.834	0.4892 2.819
0.3897 2.821	0.4151 2.840	0.4394 2.841	0.4667 2.839	0.4898 2.826
0.3904 2.826	0.4155 2.841	0.4400 2.840	0.4671 2.837	0.4903 2.829
0.3911 2.823	0.4160 2.829	0.4425 2.840	0.4676 2.842	0.4917 2.826
0.3916 2.818	0.4164 2.828	0.4439 2.840	0.4680 2.838	0.4921 2.826
0.3922 2.828	0.4169 2.837	0.4444 2.835	0.4685 2.837	0.4927 2.827
0.3927 2.821	0.4173 2.830	0.4449 2.834	0.4689 2.834	0.4932 2.827

0.4936 2.826	0.5171 2.815	0.5433 2.820	0.5677 2.808	0.5931 2.853
0.4941 2.831	0.5177 2.824	0.5439 2.827	0.5683 2.806	0.5936 2.846
0.4946 2.831	0.5182 2.830	0.5444 2.821	0.5687 2.823	0.5941 2.837
0.4951 2.828	0.5186 2.818	0.5450 2.824	0.5695 2.825	0.5946 2.837
0.4956 2.837	0.5191 2.824	0.5454 2.821	0.5706 2.822	0.5951 2.822
0.4961 2.832	0.5195 2.824	0.5459 2.831	0.5711 2.819	0.5957 2.815
0.4965 2.828	0.5200 2.825	0.5465 2.836	0.5715 2.818	0.5961 2.819
0.4971 2.822	0.5206 2.827	0.5469 2.836	0.5720 2.825	0.5967 2.814
0.4976 2.803	0.5211 2.822	0.5474 2.834	0.5724 2.833	0.5973 2.817
0.4980 2.809	0.5216 2.822	0.5478 2.841	0.5729 2.833	0.5978 2.824
0.4985 2.814	0.5225 2.820	0.5485 2.833	0.5733 2.834	0.5983 2.815
0.4989 2.814	0.5233 2.827	0.5490 2.826	0.5738 2.840	0.5988 2.815
0.4994 2.815	0.5238 2.807	0.5495 2.830	0.5743 2.839	0.5993 2.821
0.4998 2.814	0.5243 2.810	0.5500 2.828	0.5750 2.842	0.5998 2.825
0.5003 2.809	0.5249 2.800	0.5504 2.823	0.5755 2.841	0.6002 2.826
0.5009 2.810	0.5254 2.800	0.5510 2.814	0.5759 2.841	0.6008 2.833
0.5014 2.807	0.5259 2.803	0.5515 2.813	0.5764 2.838	0.6026 2.850
0.5018 2.813	0.5264 2.809	0.5519 2.800	0.5768 2.840	0.6032 2.845
0.5023 2.811	0.5269 2.821	0.5524 2.804	0.5773 2.837	0.6037 2.853
0.5028 2.818	0.5276 2.814	0.5529 2.806	0.5779 2.829	0.6041 2.844
0.5035 2.819	0.5280 2.819	0.5537 2.816	0.5784 2.838	0.6046 2.852
0.5041 2.825	0.5285 2.817	0.5545 2.815	0.5789 2.842	0.6050 2.853
0.5045 2.823	0.5290 2.813	0.5550 2.816	0.5794 2.838	0.6055 2.845
0.5050 2.827	0.5295 2.805	0.5556 2.814	0.5800 2.833	0.6060 2.855
0.5054 2.826	0.5300 2.814	0.5560 2.816	0.5806 2.816	0.6064 2.858
0.5060 2.828	0.5304 2.818	0.5566 2.814	0.5811 2.807	0.6069 2.854
0.5069 2.821	0.5309 2.828	0.5571 2.816	0.5816 2.817	0.6073 2.846
0.5075 2.823	0.5314 2.826	0.5577 2.823	0.5822 2.824	0.6078 2.849
0.5080 2.823	0.5318 2.827	0.5582 2.832	0.5827 2.825	0.6083 2.832
0.5085 2.825	0.5324 2.831	0.5586 2.833	0.5832 2.820	0.6090 2.813
0.5089 2.831	0.5331 2.830	0.5591 2.838	0.5836 2.819	0.6094 2.818
0.5094 2.831	0.5338 2.834	0.5595 2.842	0.5842 2.829	0.6099 2.816
0.5098 2.821	0.5344 2.828	0.5600 2.847	0.5848 2.829	0.6104 2.820
0.5103 2.818	0.5348 2.828	0.5606 2.840	0.5855 2.831	0.6110 2.822
0.5108 2.805	0.5354 2.827	0.5610 2.847	0.5863 2.834	0.6114 2.820
0.5112 2.803	0.5359 2.822	0.5615 2.835	0.5867 2.837	0.6119 2.819
0.5118 2.798	0.5364 2.822	0.5622 2.829	0.5873 2.835	0.6124 2.820
0.5123 2.800	0.5369 2.826	0.5628 2.832	0.5879 2.839	0.6129 2.826
0.5127 2.809	0.5378 2.819	0.5635 2.832	0.5884 2.841	0.6134 2.823
0.5132 2.813	0.5390 2.799	0.5641 2.833	0.5889 2.841	0.6138 2.815
0.5136 2.819	0.5395 2.805	0.5645 2.826	0.5894 2.854	0.6144 2.816
0.5141 2.810	0.5400 2.813	0.5650 2.832	0.5899 2.842	0.6149 2.832
0.5145 2.810	0.5406 2.819	0.5654 2.832	0.5905 2.848	0.6154 2.836
0.5150 2.801	0.5413 2.825	0.5659 2.826	0.5910 2.849	0.6158 2.845
0.5154 2.807	0.5418 2.836	0.5663 2.814	0.5914 2.851	0.6163 2.839
0.5159 2.810	0.5422 2.829	0.5668 2.807	0.5919 2.850	0.6168 2.850
0.5164 2.812	0.5428 2.825	0.5672 2.798	0.5923 2.846	0.6173 2.850

0.6183 2.844	0.6424 2.837	0.3070 2.860	0.3287 2.843	0.3524 2.850
0.6187 2.842	0.6429 2.840	0.3074 2.860	0.3291 2.846	0.3528 2.840
0.6192 2.840	0.6436 2.860	0.3078 2.845	0.3295 2.843	0.3532 2.831
0.6197 2.847	0.6442 2.854	0.3083 2.852	0.3299 2.836	0.3536 2.827
0.6203 2.842	0.6448 2.853	0.3089 2.850	0.3303 2.834	0.3542 2.815
0.6209 2.849	0.6454 2.856	0.3093 2.867	0.3306 2.841	0.3547 2.810
0.6214 2.844	0.6459 2.855	0.3097 2.871	0.3312 2.843	0.3553 2.798
0.6219 2.839	0.6464 2.857	0.3101 2.871	0.3318 2.830	0.3559 2.796
0.6224 2.826	0.6469 2.852	0.3105 2.875	0.3322 2.848	0.3563 2.804
0.6230 2.819	0.6474 2.851	0.3110 2.865	0.3328 2.850	0.3567 2.813
0.6234 2.812	0.6481 2.862	0.3118 2.845	0.3333 2.849	0.3570 2.812
0.6239 2.813	0.6486 2.862	0.3126 2.855	0.3339 2.854	0.3574 2.809
0.6244 2.816	0.6495 2.846	0.3134 2.862	0.3345 2.851	0.3578 2.820
0.6249 2.815	0.6501 2.839	0.3139 2.848	0.3349 2.854	0.3584 2.828
0.6255 2.810	0.6507 2.817	0.3143 2.847	0.3354 2.870	0.3590 2.840
0.6260 2.817	0.6511 2.796	0.3147 2.844	0.3362 2.851	0.3593 2.829
0.6266 2.826	0.6516 2.800	0.3151 2.846	0.3368 2.854	0.3597 2.847
0.6271 2.820	0.6520 2.792	0.3155 2.833	0.3372 2.867	0.3601 2.829
0.6275 2.822	0.6525 2.791	0.3158 2.845	0.3375 2.859	0.3605 2.840
0.6280 2.823	0.6530 2.807	0.3162 2.840	0.3379 2.858	0.3613 2.859
0.6285 2.822	0.6534 2.823	0.3168 2.840	0.3385 2.846	0.3616 2.857
0.6289 2.833	0.6539 2.825	0.3176 2.845	0.3395 2.828	0.3620 2.859
0.6294 2.844	0.6547 2.827	0.3181 2.847	0.3405 2.824	0.3624 2.851
0.6300 2.855	0.6554 2.821	0.3185 2.862	0.3410 2.834	0.3628 2.858
0.6304 2.853	0.6559 2.831	0.3189 2.860	0.3416 2.821	0.3641 2.858
0.6309 2.854	0.6565 2.857	0.3193 2.871	0.3422 2.814	0.3646 2.860
0.6314 2.852	0.6569 2.849	0.3197 2.874	0.3425 2.826	0.3650 2.853
0.6320 2.853	0.6574 2.865	0.3201 2.863	0.3429 2.831	0.3654 2.855
0.6326 2.851	0.6579 2.849	0.3204 2.859	0.3433 2.829	0.3658 2.837
0.6330 2.859	0.6585 2.859	0.3208 2.858	0.3440 2.819	0.3662 2.843
0.6342 2.853	0.6591 2.855	0.3212 2.859	0.3444 2.816	0.3666 2.845
0.6346 2.854	0.6595 2.851	0.3216 2.866	0.3448 2.815	0.3669 2.832
0.6351 2.848	0.6601 2.852	0.3220 2.862	0.3452 2.828	0.3673 2.821
0.6356 2.847	0.6606 2.854	0.3224 2.855	0.3455 2.839	0.3677 2.807
0.6361 2.836	0.6610 2.853	0.3227 2.865	0.3459 2.832	0.3681 2.788
0.6366 2.823	0.6615 2.849	0.3231 2.862	0.3463 2.837	0.3685 2.783
0.6371 2.816	0.6619 2.832	0.3235 2.856	0.3469 2.852	0.3689 2.784
0.6375 2.814	0.6624 2.842	0.3242 2.851	0.3477 2.848	0.3692 2.786
0.6381 2.818	0.6630 2.848	0.3249 2.853	0.3482 2.858	0.3696 2.788
0.6386 2.817	0.6635 2.842	0.3253 2.849	0.3488 2.862	0.3700 2.796
0.6390 2.815	0.6641 2.826	0.3259 2.852	0.3494 2.868	0.3704 2.804
0.6395 2.816	0.6645 2.816	0.3264 2.850	0.3501 2.859	0.3708 2.808
0.6401 2.813	2453803	0.3268 2.842	0.3505 2.866	0.3713 2.824
0.6406 2.816	0.3051 2.838	0.3272 2.827	0.3509 2.853	0.3719 2.825
0.6410 2.825	0.3057 2.852	0.3276 2.825	0.3513 2.852	0.3723 2.828
0.6415 2.830	0.3062 2.865	0.3280 2.827	0.3517 2.855	0.3731 2.840
0.6419 2.824	0.3066 2.857	0.3283 2.840	0.3521 2.853	0.3735 2.842

0.3739 2.840	0.3945 2.828	0.4155 2.857	0.4373 2.803	0.4590 2.826
0.3746 2.846	0.3949 2.797	0.4159 2.847	0.4377 2.818	0.4596 2.826
0.3750 2.848	0.3953 2.782	0.4163 2.854	0.4381 2.810	0.4602 2.832
0.3754 2.857	0.3957 2.786	0.4167 2.844	0.4384 2.816	0.4606 2.821
0.3758 2.860	0.3961 2.797	0.4171 2.862	0.4388 2.820	0.4610 2.810
0.3762 2.860	0.3964 2.792	0.4174 2.859	0.4392 2.828	0.4613 2.813
0.3765 2.850	0.3968 2.807	0.4178 2.856	0.4398 2.833	0.4629 2.824
0.3769 2.851	0.3972 2.821	0.4182 2.844	0.4404 2.828	0.4633 2.829
0.3773 2.856	0.3976 2.823	0.4186 2.844	0.4407 2.831	0.4637 2.821
0.3777 2.851	0.3980 2.835	0.4192 2.843	0.4411 2.835	0.4652 2.751
0.3781 2.855	0.3986 2.839	0.4198 2.835	0.4415 2.832	0.4656 2.770
0.3785 2.856	0.3993 2.844	0.4201 2.829	0.4425 2.823	0.4664 2.791
0.3788 2.847	0.3999 2.849	0.4205 2.823	0.4431 2.825	0.4670 2.771
0.3792 2.853	0.4005 2.852	0.4209 2.827	0.4437 2.822	0.4678 2.780
0.3796 2.846	0.4010 2.858	0.4217 2.827	0.4441 2.835	0.4683 2.787
0.3804 2.833	0.4014 2.855	0.4227 2.812	0.4445 2.831	0.4687 2.802
0.3813 2.821	0.4018 2.857	0.4231 2.802	0.4448 2.827	0.4691 2.813
0.3819 2.781	0.4022 2.866	0.4235 2.802	0.4456 2.833	0.4695 2.801
0.3823 2.771	0.4029 2.876	0.4239 2.815	0.4464 2.831	0.4700 2.801
0.3827 2.792	0.4034 2.868	0.4243 2.817	0.4470 2.818	0.4706 2.806
0.3834 2.809	0.4040 2.861	0.4248 2.826	0.4475 2.818	0.4712 2.811
0.3838 2.810	0.4044 2.863	0.4254 2.833	0.4479 2.824	0.4718 2.829
0.3842 2.823	0.4052 2.861	0.4258 2.837	0.4483 2.816	0.4724 2.838
0.3846 2.815	0.4056 2.857	0.4262 2.852	0.4487 2.820	0.4731 2.839
0.3849 2.829	0.4059 2.844	0.4266 2.839	0.4492 2.828	0.4739 2.842
0.3853 2.839	0.4063 2.829	0.4269 2.851	0.4498 2.821	0.4744 2.841
0.3857 2.836	0.4067 2.825	0.4275 2.847	0.4502 2.821	0.4748 2.832
0.3861 2.835	0.4071 2.838	0.4281 2.846	0.4506 2.818	0.4752 2.837
0.3865 2.848	0.4075 2.838	0.4285 2.849	0.4510 2.813	0.4756 2.823
0.3869 2.848	0.4079 2.832	0.4291 2.838	0.4514 2.806	0.4760 2.828
0.3872 2.847	0.4084 2.820	0.4296 2.850	0.4517 2.793	0.4764 2.818
0.3876 2.849	0.4090 2.804	0.4302 2.847	0.4521 2.796	0.4767 2.825
0.3880 2.851	0.4094 2.799	0.4308 2.834	0.4525 2.794	0.4771 2.814
0.3884 2.861	0.4098 2.801	0.4312 2.847	0.4529 2.797	0.4775 2.795
0.3888 2.858	0.4102 2.810	0.4315 2.839	0.4533 2.795	0.4779 2.801
0.3892 2.851	0.4105 2.818	0.4319 2.843	0.4537 2.793	0.4783 2.793
0.3895 2.865	0.4109 2.825	0.4325 2.841	0.4540 2.805	0.4787 2.786
0.3899 2.862	0.4113 2.830	0.4331 2.838	0.4544 2.815	0.4790 2.783
0.3903 2.858	0.4119 2.845	0.4335 2.830	0.4548 2.806	0.4794 2.790
0.3907 2.863	0.4125 2.863	0.4340 2.831	0.4552 2.818	0.4798 2.786
0.3911 2.858	0.4128 2.861	0.4346 2.822	0.4556 2.819	0.4802 2.790
0.3915 2.850	0.4132 2.851	0.4350 2.833	0.4560 2.811	0.4806 2.784
0.3918 2.855	0.4136 2.857	0.4354 2.833	0.4563 2.817	0.4810 2.790
0.3924 2.849	0.4140 2.865	0.4358 2.817	0.4567 2.828	0.4813 2.798
0.3930 2.837	0.4144 2.854	0.4361 2.819	0.4571 2.822	0.4829 2.831
0.3934 2.846	0.4148 2.866	0.4365 2.811	0.4583 2.809	0.4838 2.827
0.3939 2.839	0.4151 2.851	0.4369 2.797	0.4587 2.824	0.4842 2.827

0.4846 2.843	0.5070 2.805	0.5280 2.843	0.5509 2.816	0.5727 2.845
0.4850 2.840	0.5076 2.777	0.5284 2.845	0.5513 2.805	0.5731 2.853
0.4854 2.847	0.5080 2.781	0.5292 2.851	0.5516 2.807	0.5734 2.845
0.4858 2.852	0.5084 2.793	0.5295 2.852	0.5520 2.830	0.5738 2.844
0.4861 2.856	0.5087 2.793	0.5299 2.839	0.5524 2.821	0.5742 2.851
0.4867 2.853	0.5091 2.806	0.5303 2.838	0.5528 2.828	0.5750 2.834
0.4875 2.869	0.5095 2.816	0.5307 2.847	0.5532 2.840	0.5754 2.836
0.4881 2.858	0.5099 2.823	0.5311 2.827	0.5536 2.832	0.5757 2.826
0.4884 2.857	0.5103 2.826	0.5318 2.832	0.5541 2.832	0.5761 2.827
0.4888 2.857	0.5107 2.820	0.5322 2.827	0.5547 2.843	0.5765 2.815
0.4892 2.857	0.5110 2.817	0.5326 2.821	0.5551 2.825	0.5769 2.815
0.4896 2.846	0.5114 2.831	0.5334 2.833	0.5555 2.852	0.5773 2.808
0.4900 2.841	0.5120 2.832	0.5338 2.818	0.5563 2.838	0.5777 2.803
0.4904 2.844	0.5126 2.837	0.5341 2.819	0.5566 2.835	0.5781 2.805
0.4907 2.837	0.5130 2.845	0.5345 2.798	0.5572 2.834	0.5784 2.789
0.4913 2.832	0.5134 2.843	0.5349 2.810	0.5578 2.841	0.5790 2.804
0.4919 2.831	0.5137 2.841	0.5355 2.806	0.5582 2.855	0.5796 2.819
0.4923 2.813	0.5141 2.853	0.5361 2.806	0.5587 2.855	0.5802 2.843
0.4927 2.801	0.5145 2.855	0.5364 2.815	0.5593 2.847	0.5809 2.858
0.4930 2.789	0.5149 2.846	0.5368 2.809	0.5597 2.845	2453826+
0.4934 2.788	0.5153 2.845	0.5372 2.812	0.5601 2.826	0.3644 2.816
0.4938 2.788	0.5157 2.844	0.5378 2.823	0.5605 2.846	0.3648 2.828
0.4942 2.782	0.5160 2.850	0.5384 2.833	0.5612 2.827	0.3651 2.812
0.4946 2.790	0.5164 2.852	0.5391 2.843	0.5616 2.841	0.3655 2.828
0.4950 2.803	0.5170 2.846	0.5395 2.830	0.5627 2.815	0.3661 2.824
0.4953 2.814	0.5176 2.854	0.5401 2.833	0.5633 2.820	0.3667 2.812
0.4957 2.821	0.5180 2.845	0.5407 2.846	0.5638 2.817	0.3671 2.826
0.4963 2.828	0.5183 2.826	0.5410 2.828	0.5642 2.816	0.3674 2.823
0.4969 2.836	0.5187 2.832	0.5414 2.830	0.5646 2.813	0.3678 2.824
0.4973 2.834	0.5191 2.824	0.5428 2.843	0.5650 2.807	0.3684 2.826
0.4976 2.842	0.5197 2.821	0.5434 2.837	0.5654 2.810	0.3690 2.818
0.4980 2.839	0.5203 2.810	0.5440 2.834	0.5658 2.827	0.3694 2.810
0.4984 2.851	0.5206 2.800	0.5446 2.832	0.5661 2.821	0.3697 2.811
0.4988 2.843	0.5210 2.793	0.5451 2.821	0.5665 2.837	0.3705 2.820
0.4992 2.851	0.5218 2.790	0.5455 2.826	0.5669 2.829	0.3709 2.816
0.4996 2.849	0.5226 2.808	0.5459 2.833	0.5673 2.831	0.3713 2.808
0.4999 2.845	0.5230 2.805	0.5464 2.826	0.5677 2.845	0.3717 2.811
0.5003 2.855	0.5234 2.811	0.5470 2.821	0.5682 2.840	0.3720 2.809
0.5009 2.852	0.5238 2.817	0.5474 2.814	0.5688 2.846	0.3724 2.808
0.5017 2.856	0.5242 2.821	0.5478 2.809	0.5692 2.852	0.3732 2.806
0.5026 2.853	0.5249 2.826	0.5482 2.821	0.5698 2.859	0.3736 2.801
0.5034 2.843	0.5253 2.838	0.5486 2.814	0.5704 2.854	0.3739 2.792
0.5040 2.845	0.5261 2.854	0.5490 2.818	0.5708 2.852	0.3743 2.798
0.5045 2.831	0.5265 2.841	0.5493 2.820	0.5711 2.853	0.3747 2.795
0.5051 2.832	0.5269 2.832	0.5497 2.804	0.5715 2.861	0.3751 2.788
0.5059 2.819	0.5272 2.838	0.5501 2.816	0.5719 2.860	0.3755 2.792
0.5064 2.809	0.5276 2.839	0.5505 2.799	0.5723 2.856	0.3760 2.806

0.3766 2.809	0.4001 2.798	0.4227 2.816	0.4443 2.814	0.4649 2.800
0.3772 2.816	0.4005 2.807	0.4234 2.812	0.4447 2.797	0.4653 2.802
0.3778 2.828	0.4009 2.807	0.4238 2.815	0.4453 2.796	0.4658 2.800
0.3782 2.832	0.4014 2.799	0.4242 2.816	0.4460 2.810	0.4666 2.808
0.3787 2.807	0.4020 2.808	0.4245 2.812	0.4466 2.811	0.4672 2.810
0.3793 2.814	0.4026 2.802	0.4249 2.813	0.4470 2.791	0.4676 2.802
0.3799 2.821	0.4036 2.790	0.4253 2.822	0.4474 2.787	0.4680 2.788
0.3806 2.821	0.4040 2.801	0.4257 2.810	0.4478 2.791	0.4683 2.799
0.3816 2.834	0.4043 2.815	0.4263 2.797	0.4482 2.793	0.4687 2.792
0.3820 2.840	0.4047 2.820	0.4268 2.799	0.4486 2.797	0.4691 2.786
0.3824 2.818	0.4051 2.840	0.4272 2.796	0.4489 2.798	0.4695 2.779
0.3831 2.821	0.4055 2.822	0.4278 2.803	0.4493 2.792	0.4703 2.758
0.3840 2.809	0.4059 2.816	0.4284 2.808	0.4497 2.807	0.4706 2.770
0.3844 2.819	0.4066 2.822	0.4288 2.811	0.4503 2.806	0.4710 2.779
0.3852 2.823	0.4074 2.818	0.4291 2.808	0.4509 2.806	0.4714 2.774
0.3855 2.805	0.4078 2.828	0.4297 2.812	0.4512 2.809	0.4718 2.762
0.3859 2.797	0.4082 2.823	0.4305 2.794	0.4516 2.814	0.4724 2.756
0.3863 2.822	0.4085 2.819	0.4311 2.796	0.4520 2.809	0.4729 2.752
0.3867 2.800	0.4089 2.809	0.4314 2.801	0.4524 2.811	0.4733 2.751
0.3875 2.797	0.4093 2.820	0.4318 2.801	0.4528 2.805	0.4737 2.755
0.3878 2.802	0.4097 2.811	0.4324 2.814	0.4531 2.813	0.4742 2.770
0.3882 2.802	0.4101 2.821	0.4330 2.807	0.4535 2.809	0.4749 2.772
0.3886 2.802	0.4105 2.815	0.4335 2.814	0.4539 2.810	0.4755 2.787
0.3889 2.795	0.4108 2.817	0.4341 2.816	0.4543 2.805	0.4762 2.788
0.3894 2.798	0.4112 2.819	0.4345 2.815	0.4547 2.805	0.4768 2.787
0.3898 2.808	0.4116 2.805	0.4349 2.815	0.4553 2.796	0.4772 2.785
0.3901 2.799	0.4120 2.804	0.4353 2.813	0.4558 2.795	0.4775 2.791
0.3907 2.811	0.4128 2.798	0.4356 2.806	0.4562 2.789	0.4779 2.789
0.3913 2.819	0.4131 2.795	0.4360 2.812	0.4566 2.790	0.4783 2.792
0.3917 2.824	0.4135 2.808	0.4364 2.817	0.4570 2.795	0.4789 2.801
0.3921 2.830	0.4141 2.800	0.4368 2.807	0.4574 2.779	0.4794 2.795
0.3924 2.835	0.4153 2.812	0.4372 2.802	0.4577 2.794	0.4798 2.802
0.3928 2.819	0.4158 2.809	0.4376 2.804	0.4581 2.793	0.4804 2.798
0.3932 2.823	0.4162 2.807	0.4379 2.817	0.4585 2.780	0.4810 2.796
0.3936 2.814	0.4166 2.802	0.4383 2.809	0.4589 2.778	0.4822 2.785
0.3940 2.815	0.4172 2.822	0.4387 2.821	0.4593 2.776	0.4833 2.799
0.3943 2.819	0.4177 2.826	0.4391 2.822	0.4597 2.769	0.4831 2.793
0.3947 2.820	0.4181 2.818	0.4395 2.818	0.4602 2.767	0.4836 2.784
0.3951 2.823	0.4185 2.817	0.4399 2.803	0.4608 2.781	0.4842 2.778
0.3955 2.826	0.4189 2.822	0.4402 2.803	0.4612 2.775	0.4846 2.776
0.3959 2.825	0.4193 2.811	0.4406 2.791	0.4622 2.788	0.4850 2.788
0.3963 2.828	0.4197 2.822	0.4410 2.797	0.4626 2.793	0.4854 2.777
0.3969 2.807	0.4202 2.825	0.4416 2.805	0.4630 2.792	0.4857 2.777
0.3978 2.813	0.4208 2.827	0.4424 2.799	0.4634 2.794	0.4861 2.777
0.3986 2.806	0.4216 2.817	0.4428 2.802	0.4637 2.797	0.4865 2.780
0.3991 2.807	0.4219 2.823	0.4432 2.815	0.4641 2.805	0.4869 2.784
0.3997 2.809	0.4223 2.813	0.4440 2.807	0.4645 2.809	0.4873 2.779

0.4877 2.785	0.5080 2.828	0.5285 2.795	0.5495 2.819	0.5707 2.797
0.4880 2.786	0.5083 2.819	0.5291 2.791	0.5499 2.815	0.5713 2.809
0.4884 2.789	0.5087 2.823	0.5296 2.792	0.5503 2.817	0.5724 2.816
0.4888 2.797	0.5091 2.820	0.5300 2.797	0.5507 2.820	0.5730 2.825
0.4892 2.804	0.5095 2.809	0.5304 2.811	0.5511 2.828	0.5736 2.817
0.4897 2.797	0.5099 2.801	0.5308 2.809	0.5516 2.804	0.5742 2.830
0.4905 2.805	0.5102 2.784	0.5312 2.805	0.5522 2.801	0.5746 2.822
0.4911 2.820	0.5106 2.795	0.5316 2.821	0.5526 2.805	0.5751 2.834
0.4915 2.823	0.5110 2.789	0.5319 2.822	0.5530 2.805	0.5759 2.829
0.4919 2.817	0.5114 2.784	0.5323 2.820	0.5533 2.812	0.5765 2.823
0.4923 2.808	0.5118 2.791	0.5327 2.817	0.5537 2.800	0.5770 2.821
0.4926 2.821	0.5122 2.788	0.5331 2.811	0.5541 2.806	0.5776 2.813
0.4930 2.818	0.5125 2.800	0.5335 2.815	0.5545 2.808	0.5780 2.821
0.4934 2.823	0.5129 2.789	0.5339 2.818	0.5549 2.813	0.5786 2.837
0.4938 2.829	0.5133 2.791	0.5342 2.816	0.5553 2.803	0.5793 2.837
0.4942 2.820	0.5137 2.794	0.5346 2.817	0.5556 2.809	0.5799 2.830
0.4946 2.814	0.5141 2.781	0.5350 2.813	0.5560 2.802	0.5809 2.832
0.4949 2.816	0.5145 2.796	0.5354 2.813	0.5564 2.801	0.5813 2.818
0.4953 2.810	0.5148 2.791	0.5358 2.815	0.5568 2.802	0.5816 2.817
0.4957 2.808	0.5152 2.795	0.5364 2.810	0.5576 2.815	0.5820 2.819
0.4961 2.792	0.5160 2.805	0.5369 2.812	0.5581 2.817	0.5824 2.817
0.4965 2.794	0.5164 2.806	0.5373 2.808	0.5587 2.817	0.5828 2.820
0.4968 2.790	0.5168 2.815	0.5377 2.807	0.5591 2.817	0.5832 2.823
0.4972 2.785	0.5171 2.817	0.5381 2.801	0.5595 2.823	0.5836 2.819
0.4976 2.781	0.5175 2.822	0.5384 2.793	0.5601 2.826	0.5841 2.799
0.4984 2.784	0.5179 2.832	0.5388 2.796	0.5612 2.816	0.5847 2.801
0.4991 2.783	0.5185 2.832	0.5392 2.805	0.5615 2.820	0.5850 2.798
0.4995 2.780	0.5191 2.824	0.5396 2.791	0.5619 2.820	0.5855 2.803
0.4999 2.783	0.5194 2.829	0.5400 2.801	0.5623 2.813	0.5859 2.814
0.5003 2.781	0.5198 2.829	0.5409 2.803	0.5627 2.816	0.5862 2.834
0.5007 2.788	0.5202 2.822	0.5419 2.799	0.5631 2.823	0.5866 2.821
0.5011 2.791	0.5206 2.822	0.5422 2.800	0.5637 2.816	0.5870 2.843
0.5020 2.794	0.5216 2.828	0.5426 2.801	0.5642 2.820	0.5874 2.844
0.5026 2.810	0.5220 2.820	0.5430 2.800	0.5646 2.827	0.5878 2.859
0.5030 2.818	0.5224 2.822	0.5434 2.810	0.5650 2.818	0.5882 2.876
0.5034 2.827	0.5227 2.823	0.5438 2.814	0.5654 2.819	0.5887 2.859
0.5037 2.822	0.5231 2.827	0.5443 2.806	0.5659 2.812	0.5893 2.853
0.5041 2.827	0.5235 2.819	0.5449 2.825	0.5667 2.812	0.5897 2.857
0.5045 2.822	0.5239 2.806	0.5453 2.825	0.5673 2.818	0.5901 2.851
0.5049 2.832	0.5245 2.794	0.5457 2.829	0.5677 2.817	0.5905 2.853
0.5053 2.824	0.5250 2.781	0.5461 2.822	0.5681 2.822	0.5908 2.849
0.5057 2.825	0.5258 2.784	0.5465 2.831	0.5684 2.826	0.5914 2.864
0.5060 2.837	0.5262 2.785	0.5468 2.833	0.5688 2.814	0.5920 2.864
0.5064 2.830	0.5267 2.794	0.5478 2.832	0.5692 2.806	0.5924 2.863
0.5068 2.825	0.5273 2.795	0.5484 2.817	0.5696 2.811	0.5928 2.853
0.5072 2.825	0.5277 2.793	0.5487 2.821	0.5700 2.806	0.5931 2.849
0.5076 2.824	0.5281 2.789	0.5491 2.827	0.5704 2.813	0.5935 2.843

0.5939 2.840	0.6173 2.850	0.6382 2.799	0.3103 2.821	0.3568 2.837
0.5945 2.822	0.6177 2.858	0.6388 2.822	0.3108 2.821	0.3573 2.847
0.5952 2.822	0.6181 2.847	0.6392 2.833	0.3115 2.823	0.3577 2.848
0.5958 2.827	0.6185 2.860	0.6396 2.837	0.3120 2.824	0.3582 2.856
0.5962 2.830	0.6189 2.859	2453828+	0.3124 2.826	0.3586 2.853
0.5966 2.824	0.6192 2.861	0.2879 2.856	0.3280 2.856	0.3593 2.852
0.5970 2.820	0.6203 2.844	0.2883 2.869	0.3290 2.863	0.3600 2.844
0.5973 2.814	0.6209 2.823	0.2889 2.863	0.3296 2.848	0.3607 2.833
0.5977 2.806	0.6213 2.813	0.2893 2.867	0.3301 2.855	0.3613 2.838
0.5981 2.811	0.6217 2.798	0.2898 2.867	0.3307 2.855	0.3618 2.839
0.5985 2.806	0.6221 2.787	0.2902 2.861	0.3314 2.843	0.3622 2.837
0.5991 2.809	0.6227 2.782	0.2907 2.865	0.3319 2.845	0.3630 2.838
0.5996 2.818	0.6232 2.792	0.2911 2.865	0.3327 2.844	0.3644 2.831
0.6005 2.852	0.6236 2.801	0.2916 2.865	0.3336 2.842	0.3663 2.827
0.6009 2.844	0.6241 2.797	0.2921 2.856	0.3343 2.838	0.3668 2.829
0.6012 2.856	0.6248 2.803	0.2925 2.862	0.3350 2.840	0.3672 2.835
0.6016 2.859	0.6251 2.818	0.2930 2.851	0.3359 2.835	0.3677 2.830
0.6030 2.878	0.6255 2.800	0.2934 2.851	0.3366 2.822	0.3683 2.834
0.6035 2.868	0.6259 2.802	0.2939 2.844	0.3370 2.814	0.3688 2.831
0.6039 2.873	0.6263 2.801	0.2943 2.841	0.3375 2.819	0.3692 2.840
0.6043 2.858	0.6267 2.798	0.2948 2.837	0.3380 2.818	0.3697 2.841
0.6057 2.849	0.6270 2.815	0.2952 2.821	0.3384 2.826	0.3702 2.841
0.6066 2.867	0.6274 2.820	0.2959 2.819	0.3401 2.837	0.3706 2.852
0.6070 2.854	0.6278 2.821	0.2966 2.821	0.3411 2.849	0.3711 2.846
0.6074 2.843	0.6282 2.830	0.2970 2.819	0.3419 2.838	0.3715 2.852
0.6078 2.823	0.6286 2.827	0.2975 2.825	0.3426 2.843	0.3720 2.845
0.6081 2.813	0.6290 2.838	0.2979 2.822	0.3433 2.854	0.3727 2.845
0.6085 2.810	0.6293 2.846	0.2984 2.837	0.3442 2.859	0.3733 2.840
0.6089 2.811	0.6300 2.839	0.2988 2.830	0.3449 2.870	0.3747 2.837
0.6101 2.812	0.6308 2.843	0.3005 2.844	0.3469 2.873	0.3751 2.836
0.6104 2.826	0.6312 2.845	0.3009 2.853	0.3475 2.851	0.3756 2.837
0.6108 2.828	0.6315 2.840	0.3016 2.853	0.3482 2.844	0.3852 2.837
0.6112 2.810	0.6319 2.852	0.3023 2.855	0.3487 2.844	0.3857 2.837
0.6116 2.804	0.6323 2.845	0.3033 2.860	0.3494 2.827	0.3861 2.827
0.6120 2.796	0.6327 2.855	0.3040 2.858	0.3500 2.814	0.3866 2.813
0.6123 2.817	0.6331 2.855	0.3044 2.858	0.3505 2.817	0.3870 2.819
0.6127 2.813	0.6337 2.848	0.3049 2.861	0.3509 2.812	0.3875 2.810
0.6131 2.800	0.6342 2.839	0.3055 2.857	0.3514 2.809	0.3880 2.799
0.6135 2.817	0.6346 2.826	0.3062 2.868	0.3518 2.808	0.3886 2.796
0.6141 2.831	0.6350 2.825	0.3067 2.865	0.3524 2.812	0.3890 2.803
0.6146 2.836	0.6354 2.803	0.3071 2.854	0.3532 2.825	0.3895 2.809
0.6150 2.853	0.6357 2.794	0.3076 2.857	0.3537 2.822	0.3899 2.813
0.6154 2.860	0.6361 2.804	0.3080 2.855	0.3541 2.827	0.3904 2.820
0.6158 2.846	0.6365 2.789	0.3085 2.841	0.3546 2.833	0.3908 2.817
0.6162 2.846	0.6369 2.799	0.3089 2.837	0.3550 2.839	0.3913 2.815
0.6166 2.863	0.6373 2.812	0.3094 2.830	0.3557 2.836	0.3918 2.819
0.6169 2.861	0.6377 2.819	0.3098 2.825	0.3564 2.842	0.3922 2.821

0.3929 2.821	0.4614 2.815	0.4866 2.803	0.3720 2.839	0.3970 2.821
0.3936 2.821	0.4618 2.819	0.4870 2.812	0.3726 2.834	0.3973 2.828
0.3940 2.831	0.4623 2.818	0.4875 2.812	0.3732 2.832	0.3977 2.822
0.3945 2.833	0.4627 2.816	0.4879 2.812	0.3736 2.828	0.3981 2.829
0.3949 2.842	0.4632 2.823	0.4884 2.816	0.3739 2.825	0.3985 2.830
0.3954 2.837	0.4636 2.821	0.4888 2.817	0.3743 2.827	0.3989 2.823
0.3961 2.842	0.4646 2.827	0.4893 2.820	0.3749 2.830	0.3993 2.820
0.3968 2.838	0.4653 2.829	0.4897 2.826	0.3755 2.830	0.3996 2.824
0.3975 2.838	0.4658 2.832	0.4904 2.820	0.3759 2.826	0.4000 2.822
0.3981 2.830	0.4662 2.825	0.4911 2.824	0.3765 2.825	0.4006 2.828
0.3986 2.832	0.4667 2.815	0.4915 2.828	0.3770 2.815	0.4014 2.821
0.3990 2.828	0.4671 2.812	0.4920 2.826	0.3776 2.803	0.4020 2.822
0.4005 2.779	0.4676 2.811	0.4925 2.827	0.3782 2.793	0.4025 2.819
0.4015 2.761	0.4683 2.807	0.4929 2.833	0.3786 2.801	0.4031 2.818
0.4019 2.773	0.4691 2.808	0.4934 2.831	0.3790 2.804	0.4037 2.821
0.4024 2.778	0.4698 2.809	0.4940 2.832	0.3795 2.810	0.4043 2.820
0.4028 2.780	0.4703 2.806	0.4947 2.831	0.3803 2.814	0.4048 2.816
0.4033 2.788	0.4707 2.799	0.4952 2.833	0.3811 2.816	0.4054 2.808
0.4037 2.798	0.4712 2.808	2453830+	0.3817 2.818	0.4058 2.811
0.4042 2.809	0.4719 2.807	0.3570 2.842	0.3820 2.814	0.4062 2.809
0.4046 2.806	0.4725 2.813	0.3574 2.844	0.3824 2.820	0.4066 2.806
0.4051 2.811	0.4730 2.810	0.3579 2.843	0.3828 2.824	0.4072 2.809
0.4492 2.817	0.4734 2.817	0.3587 2.842	0.3832 2.826	0.4080 2.819
0.4496 2.826	0.4739 2.816	0.3593 2.840	0.3836 2.830	0.4085 2.818
0.4501 2.831	0.4743 2.824	0.3597 2.839	0.3840 2.836	0.4089 2.822
0.4505 2.836	0.4750 2.823	0.3601 2.836	0.3845 2.839	0.4095 2.819
0.4510 2.828	0.4757 2.828	0.3610 2.828	0.3851 2.830	0.4101 2.820
0.4514 2.829	0.4761 2.826	0.3616 2.825	0.3855 2.837	0.4104 2.828
0.4519 2.835	0.4766 2.826	0.3622 2.818	0.3859 2.836	0.4108 2.827
0.4523 2.828	0.4771 2.821	0.3629 2.804	0.3863 2.829	0.4114 2.832
0.4528 2.821	0.4775 2.824	0.3635 2.804	0.3867 2.829	0.4122 2.840
0.4532 2.813	0.4780 2.829	0.3639 2.799	0.3873 2.825	0.4128 2.836
0.4537 2.807	0.4784 2.835	0.3645 2.800	0.3878 2.836	0.4131 2.840
0.4541 2.800	0.4791 2.832	0.3651 2.807	0.3882 2.829	0.4137 2.841
0.4546 2.805	0.4798 2.827	0.3657 2.811	0.3888 2.824	0.4143 2.833
0.4550 2.803	0.4802 2.825	0.3662 2.821	0.3895 2.818	0.4147 2.832
0.4555 2.801	0.4807 2.825	0.3666 2.815	0.3903 2.813	0.4151 2.835
0.4559 2.796	0.4811 2.819	0.3672 2.819	0.3909 2.804	0.4155 2.835
0.4564 2.794	0.4823 2.809	0.3678 2.824	0.3921 2.798	0.4160 2.830
0.4569 2.796	0.4830 2.810	0.3682 2.822	0.3925 2.805	0.4168 2.834
0.4573 2.790	0.4834 2.807	0.3685 2.827	0.3928 2.806	0.4174 2.836
0.4578 2.800	0.4839 2.809	0.3689 2.828	0.3934 2.813	0.4178 2.833
0.4582 2.803	0.4843 2.805	0.3693 2.829	0.3942 2.814	0.4182 2.834
0.4587 2.803	0.4848 2.801	0.3697 2.837	0.3948 2.809	0.4185 2.831
0.4594 2.815	0.4852 2.803	0.3701 2.837	0.3952 2.809	0.4189 2.821
0.4600 2.815	0.4857 2.801	0.3710 2.840	0.3962 2.817	0.4197 2.822
0.4607 2.820	0.4861 2.800	0.3716 2.835	0.3966 2.815	0.4201 2.823

0.4205 2.821	0.4451 2.836	0.4683 2.817	0.4923 2.831	0.5175 2.841
0.4168 2.834	0.4455 2.842	0.4687 2.811	0.4929 2.826	0.5182 2.839
0.4216 2.823	0.4459 2.842	0.4692 2.816	0.4934 2.802	0.5188 2.840
0.4220 2.826	0.4463 2.832	0.4700 2.816	0.4938 2.794	0.5192 2.832
0.4224 2.826	0.4467 2.837	0.4706 2.812	0.4942 2.795	0.5199 2.826
0.4228 2.832	0.4471 2.835	0.4710 2.805	0.4946 2.799	0.5203 2.827
0.4233 2.829	0.4474 2.837	0.4714 2.805	0.4950 2.791	0.5207 2.823
0.4239 2.821	0.4478 2.839	0.4719 2.811	0.4956 2.799	0.5211 2.825
0.4243 2.824	0.4482 2.832	0.4725 2.824	0.4961 2.817	0.5215 2.811
0.4247 2.833	0.4488 2.835	0.4729 2.829	0.4965 2.818	0.5219 2.811
0.4251 2.839	0.4494 2.844	0.4735 2.823	0.4969 2.814	0.5222 2.817
0.4257 2.826	0.4498 2.841	0.4744 2.834	0.4975 2.818	0.5226 2.804
0.4262 2.832	0.4501 2.849	0.4761 2.845	0.4983 2.824	0.5235 2.804
0.4266 2.835	0.4505 2.846	0.4764 2.841	0.4988 2.817	0.5239 2.806
0.4272 2.838	0.4509 2.837	0.4768 2.835	0.4994 2.827	0.5242 2.803
0.4278 2.834	0.4515 2.832	0.4774 2.834	0.5000 2.844	0.5246 2.813
0.4282 2.833	0.4521 2.832	0.4780 2.832	0.5004 2.849	0.5252 2.818
0.4286 2.827	0.4526 2.828	0.4784 2.833	0.5010 2.849	0.5258 2.819
0.4289 2.812	0.4532 2.819	0.4789 2.824	0.5017 2.834	0.5262 2.815
0.4293 2.815	0.4540 2.813	0.4795 2.829	0.5027 2.830	0.5265 2.816
0.4297 2.819	0.4548 2.822	0.4799 2.824	0.5035 2.840	0.5269 2.826
0.4301 2.823	0.4552 2.826	0.4803 2.810	0.5039 2.850	0.5273 2.823
0.4305 2.824	0.4555 2.813	0.4807 2.806	0.5042 2.843	0.5277 2.823
0.4309 2.824	0.4561 2.808	0.4813 2.804	0.5046 2.834	0.5283 2.831
0.4313 2.830	0.4567 2.806	0.4818 2.796	0.5050 2.840	0.5289 2.833
0.4316 2.833	0.4571 2.806	0.4824 2.799	0.5054 2.838	0.5293 2.840
0.4320 2.820	0.4575 2.807	0.4832 2.812	0.5058 2.824	0.5296 2.845
0.4326 2.828	0.4579 2.814	0.4838 2.813	0.5062 2.825	0.5300 2.845
0.4333 2.829	0.4582 2.821	0.4842 2.813	0.5066 2.818	0.5304 2.834
0.4341 2.830	0.4586 2.823	0.4847 2.812	0.5071 2.818	0.5308 2.841
0.4370 2.824	0.4592 2.822	0.4853 2.822	0.5079 2.803	0.5312 2.838
0.4374 2.825	0.4600 2.838	0.4857 2.820	0.5087 2.790	0.5316 2.839
0.4378 2.820	0.4608 2.829	0.4861 2.823	0.5093 2.790	0.5320 2.840
0.4382 2.828	0.4613 2.832	0.4865 2.833	0.5096 2.805	0.5323 2.841
0.4386 2.825	0.4617 2.841	0.4869 2.826	0.5100 2.807	0.5327 2.838
0.4390 2.828	0.4623 2.840	0.4872 2.834	0.5104 2.808	0.5331 2.842
0.4393 2.823	0.4631 2.839	0.4876 2.829	0.5108 2.819	0.5335 2.845
0.4397 2.827	0.4636 2.836	0.4880 2.841	0.5114 2.826	0.5339 2.840
0.4405 2.830	0.4640 2.838	0.4884 2.836	0.5120 2.823	0.5343 2.843
0.4413 2.836	0.4644 2.834	0.4888 2.841	0.5125 2.818	0.5347 2.837
0.4417 2.825	0.4648 2.838	0.4892 2.837	0.5131 2.820	0.5373 2.821
0.4420 2.823	0.4652 2.840	0.4896 2.839	0.5135 2.828	0.5383 2.822
0.4426 2.809	0.4658 2.832	0.4899 2.831	0.5139 2.826	0.5390 2.817
0.4434 2.815	0.4663 2.825	0.4903 2.834	0.5143 2.838	0.5402 2.827
0.4440 2.828	0.4669 2.815	0.4907 2.831	0.5153 2.839	0.5411 2.830
0.4444 2.822	0.4675 2.812	0.4911 2.833	0.5157 2.846	2453847+
0.4447 2.822	0.4679 2.805	0.4917 2.832	0.5162 2.844	0.3846 2.811

0.3853 2.819	0.4110 2.803	0.4350 2.845	0.4591 2.863	0.4827 2.852
0.3862 2.828	0.4114 2.807	0.4355 2.838	0.4596 2.857	0.4836 2.845
0.3869 2.837	0.4119 2.814	0.4361 2.827	0.4600 2.861	0.4843 2.851
0.3876 2.840	0.4123 2.817	0.4364 2.834	0.4607 2.862	0.4847 2.860
0.3882 2.842	0.4128 2.830	0.4371 2.833	0.4615 2.861	0.4852 2.856
0.3887 2.845	0.4135 2.840	0.4378 2.827	0.4620 2.859	0.4856 2.852
0.3891 2.847	0.4142 2.848	0.4382 2.829	0.4624 2.859	0.4861 2.852
0.3896 2.846	0.4146 2.851	0.4389 2.819	0.4629 2.849	0.4865 2.857
0.3901 2.842	0.4151 2.851	0.4396 2.820	0.4634 2.849	0.4870 2.849
0.3907 2.856	0.4155 2.855	0.4403 2.832	0.4638 2.844	0.4875 2.856
0.3916 2.852	0.4162 2.858	0.4410 2.843	0.4643 2.835	0.4879 2.856
0.3923 2.850	0.4169 2.859	0.4414 2.842	0.4647 2.842	0.4884 2.859
0.3928 2.848	0.4173 2.860	0.4419 2.847	0.4655 2.833	0.4888 2.857
0.3932 2.846	0.4178 2.862	0.4425 2.857	0.4663 2.825	0.4893 2.855
0.3937 2.843	0.4182 2.865	0.4432 2.851	0.4670 2.828	0.4897 2.846
0.3942 2.840	0.4187 2.863	0.4439 2.856	0.4675 2.832	0.4902 2.846
0.3946 2.834	0.4192 2.860	0.4446 2.856	0.4679 2.841	0.4908 2.828
0.3951 2.826	0.4196 2.861	0.4453 2.857	0.4684 2.840	0.4915 2.818
0.3955 2.816	0.4201 2.861	0.4460 2.863	0.4688 2.842	0.4920 2.811
0.3962 2.805	0.4205 2.854	0.4464 2.856	0.4693 2.852	0.4927 2.812
0.3969 2.788	0.4210 2.849	0.4469 2.862	0.4697 2.852	0.4934 2.818
0.3973 2.789	0.4214 2.837	0.4473 2.852	0.4702 2.853	0.4938 2.818
0.3978 2.783	0.4219 2.832	0.4478 2.856	0.4708 2.854	0.4945 2.825
0.3982 2.798	0.4223 2.824	0.4482 2.858	0.4716 2.851	0.4952 2.833
0.3987 2.809	0.4228 2.818	0.4487 2.850	0.4720 2.851	0.4956 2.840
0.3992 2.822	0.4232 2.811	0.4491 2.841	0.4725 2.852	0.4961 2.839
0.3996 2.830	0.4237 2.811	0.4496 2.840	0.4729 2.858	0.4965 2.845
0.4001 2.833	0.4241 2.804	0.4500 2.840	0.4734 2.854	0.4970 2.844
0.4005 2.843	0.4246 2.798	0.4505 2.847	0.4738 2.859	0.4975 2.851
0.4010 2.845	0.4253 2.799	0.4510 2.841	0.4743 2.853	0.4979 2.855
0.4014 2.840	0.4260 2.820	0.4514 2.844	0.4747 2.847	0.4984 2.855
0.4019 2.843	0.4264 2.833	0.4519 2.835	0.4752 2.853	0.4988 2.854
0.4023 2.841	0.4269 2.843	0.4523 2.832	0.4756 2.860	0.4993 2.855
0.4028 2.846	0.4273 2.849	0.4528 2.822	0.4761 2.850	0.4997 2.848
0.4032 2.849	0.4278 2.849	0.4532 2.824	0.4765 2.845	0.5002 2.850
0.4039 2.855	0.4282 2.858	0.4537 2.832	0.4770 2.843	0.5006 2.860
0.4046 2.851	0.4287 2.856	0.4541 2.834	0.4775 2.835	0.5011 2.862
0.4051 2.858	0.4294 2.855	0.4546 2.842	0.4779 2.823	0.5015 2.863
0.4058 2.859	0.4303 2.854	0.4550 2.845	0.4784 2.821	0.5020 2.860
0.4064 2.849	0.4310 2.859	0.4555 2.851	0.4788 2.810	0.5024 2.861
0.4071 2.852	0.4314 2.861	0.4559 2.858	0.4793 2.808	0.5029 2.854
0.4078 2.845	0.4319 2.863	0.4564 2.857	0.4797 2.808	0.5034 2.851
0.4082 2.840	0.4323 2.858	0.4569 2.854	0.4802 2.807	0.5038 2.850
0.4087 2.832	0.4328 2.859	0.4573 2.859	0.4806 2.816	0.5043 2.843
0.4092 2.824	0.4332 2.855	0.4578 2.860	0.4811 2.823	0.5047 2.839
0.4096 2.822	0.4337 2.853	0.4582 2.861	0.4815 2.829	0.5054 2.829
0.4103 2.811	0.4343 2.849	0.4587 2.858	0.4820 2.833	0.5061 2.827

0.5065 2.827	0.5320 2.822	0.5564 2.866	0.5820 2.884	0.6096 2.894
0.5070 2.827	0.5324 2.812	0.5569 2.858	0.5824 2.890	0.6103 2.893
0.5077 2.829	0.5329 2.794	0.5573 2.852	0.5831 2.877	0.6108 2.878
0.5084 2.834	0.5334 2.801	0.5578 2.848	0.5838 2.870	0.6115 2.885
0.5090 2.838	0.5338 2.803	0.5582 2.841	0.5831 2.877	2453848+
0.5097 2.841	0.5343 2.811	0.5587 2.839	0.5852 2.857	0.3211 2.809
0.5102 2.848	0.5349 2.827	0.5594 2.839	0.5856 2.856	0.3215 2.813
0.5109 2.853	0.5356 2.837	0.5603 2.811	0.5861 2.854	0.3223 2.812
0.5115 2.856	0.5364 2.854	0.5610 2.810	0.5865 2.852	0.3229 2.812
0.5120 2.857	0.5368 2.855	0.5614 2.817	0.5870 2.843	0.3234 2.806
0.5124 2.856	0.5373 2.866	0.5619 2.838	0.5876 2.839	0.3240 2.805
0.5129 2.863	0.5377 2.872	0.5623 2.847	0.5884 2.828	0.3247 2.814
0.5134 2.859	0.5385 2.871	0.5628 2.852	0.5891 2.842	0.3252 2.826
0.5140 2.859	0.5391 2.877	0.5633 2.864	0.5897 2.849	0.3256 2.830
0.5150 2.859	0.5396 2.872	0.5640 2.869	0.5902 2.868	0.3263 2.838
0.5156 2.854	0.5400 2.873	0.5646 2.875	0.5906 2.870	0.3270 2.846
0.5161 2.844	0.5407 2.877	0.5651 2.872	0.5911 2.878	0.3274 2.852
0.5165 2.838	0.5414 2.862	0.5655 2.877	0.5916 2.883	0.3279 2.860
0.5170 2.849	0.5418 2.859	0.5660 2.874	0.5920 2.883	0.3284 2.858
0.5174 2.859	0.5423 2.858	0.5664 2.874	0.5925 2.882	0.3288 2.859
0.5179 2.843	0.5427 2.853	0.5671 2.874	0.5929 2.882	0.3298 2.856
0.5184 2.835	0.5432 2.854	0.5678 2.873	0.5934 2.877	0.3302 2.862
0.5188 2.825	0.5437 2.847	0.5683 2.871	0.5941 2.880	0.3306 2.867
0.5193 2.818	0.5441 2.850	0.5687 2.867	0.5948 2.886	0.3310 2.864
0.5197 2.817	0.5448 2.851	0.5694 2.870	0.5952 2.891	0.3313 2.863
0.5202 2.819	0.5455 2.840	0.5701 2.852	0.5957 2.881	0.3319 2.860
0.5206 2.824	0.5459 2.831	0.5708 2.847	0.5961 2.875	0.3325 2.860
0.5213 2.834	0.5464 2.819	0.5715 2.839	0.5968 2.873	0.3329 2.858
0.5220 2.836	0.5468 2.811	0.5719 2.847	0.5977 2.866	0.3333 2.853
0.5224 2.836	0.5473 2.810	0.5724 2.845	0.5984 2.851	0.3336 2.849
0.5229 2.839	0.5478 2.813	0.5728 2.843	0.5989 2.849	0.3340 2.843
0.5236 2.845	0.5482 2.822	0.5733 2.833	0.5995 2.844	0.3344 2.845
0.5243 2.850	0.5487 2.838	0.5742 2.827	0.6005 2.844	0.3348 2.836
0.5247 2.853	0.5491 2.852	0.5747 2.824	0.6018 2.853	0.3352 2.827
0.5254 2.853	0.5498 2.857	0.5751 2.831	0.6028 2.849	0.3355 2.828
0.5261 2.855	0.5505 2.862	0.5756 2.844	0.6034 2.851	0.3359 2.830
0.5265 2.864	0.5510 2.867	0.5760 2.857	0.6039 2.863	0.3363 2.831
0.5272 2.864	0.5514 2.865	0.5767 2.872	0.6044 2.868	0.3367 2.833
0.5279 2.866	0.5519 2.869	0.5774 2.874	0.6048 2.875	0.3371 2.829
0.5284 2.859	0.5526 2.878	0.5778 2.879	0.6055 2.868	0.3375 2.817
0.5288 2.864	0.5532 2.876	0.5783 2.878	0.6062 2.879	0.3378 2.814
0.5293 2.864	0.5537 2.872	0.5788 2.882	0.6066 2.876	0.3382 2.811
0.5297 2.850	0.5541 2.875	0.5795 2.878	0.6071 2.884	0.3388 2.820
0.5302 2.849	0.5546 2.883	0.5801 2.880	0.6076 2.882	0.3394 2.823
0.5306 2.851	0.5550 2.879	0.5806 2.879	0.6080 2.888	0.3398 2.829
0.5311 2.850	0.5555 2.877	0.5810 2.882	0.6085 2.892	0.3401 2.829
0.5315 2.846	0.5560 2.874	0.5815 2.887	0.6089 2.899	0.3407 2.836

0.3413 2.841	0.3616 2.838	0.3834 2.834	0.4060 2.831	0.4278 2.854
0.3417 2.845	0.3619 2.836	0.3838 2.837	0.4063 2.828	0.4282 2.849
0.3420 2.846	0.3623 2.832	0.3841 2.837	0.4069 2.824	0.4285 2.853
0.3424 2.850	0.3627 2.827	0.3845 2.837	0.4075 2.825	0.4289 2.849
0.3428 2.848	0.3631 2.821	0.3851 2.843	0.4079 2.826	0.4293 2.851
0.3434 2.847	0.3635 2.824	0.3857 2.841	0.4084 2.825	0.4299 2.852
0.3440 2.846	0.3639 2.819	0.3861 2.836	0.4090 2.827	0.4305 2.848
0.3443 2.842	0.3646 2.821	0.3866 2.836	0.4094 2.825	0.4308 2.844
0.3447 2.852	0.3652 2.821	0.3872 2.834	0.4098 2.830	0.4314 2.840
0.3451 2.857	0.3660 2.813	0.3876 2.840	0.4102 2.829	0.4320 2.838
0.3457 2.850	0.3665 2.813	0.3880 2.838	0.4108 2.837	0.4324 2.838
0.3463 2.854	0.3669 2.815	0.3883 2.843	0.4113 2.837	0.4327 2.838
0.3466 2.851	0.3673 2.818	0.3887 2.838	0.4117 2.841	0.4331 2.837
0.3470 2.849	0.3679 2.822	0.3891 2.838	0.4121 2.844	0.4335 2.836
0.3474 2.850	0.3685 2.832	0.3895 2.841	0.4127 2.845	0.4343 2.834
0.3480 2.838	0.3688 2.834	0.3899 2.840	0.4132 2.844	0.4347 2.832
0.3486 2.827	0.3692 2.832	0.3904 2.837	0.4136 2.843	0.4350 2.834
0.3489 2.820	0.3698 2.836	0.3910 2.832	0.4142 2.844	0.4354 2.833
0.3493 2.814	0.3704 2.838	0.3914 2.828	0.4148 2.849	0.4364 2.835
0.3497 2.819	0.3707 2.842	0.3918 2.825	0.4151 2.850	0.4371 2.838
0.3501 2.819	0.3711 2.837	0.3922 2.829	0.4155 2.847	0.4377 2.842
0.3505 2.823	0.3715 2.840	0.3926 2.822	0.4159 2.851	0.4383 2.845
0.3509 2.821	0.3719 2.839	0.3931 2.822	0.4163 2.848	0.4389 2.850
0.3512 2.819	0.3723 2.840	0.3937 2.817	0.4167 2.849	0.4393 2.844
0.3516 2.823	0.3727 2.836	0.3941 2.817	0.4171 2.852	0.4396 2.850
0.3522 2.820	0.3730 2.835	0.3949 2.814	0.4176 2.845	0.4400 2.852
0.3528 2.818	0.3734 2.833	0.3952 2.817	0.4184 2.844	0.4404 2.851
0.3531 2.825	0.3738 2.840	0.3956 2.821	0.4190 2.843	0.4408 2.855
0.3535 2.828	0.3742 2.836	0.3960 2.827	0.4194 2.844	0.4413 2.851
0.3539 2.838	0.3748 2.842	0.3968 2.833	0.4197 2.844	0.4421 2.849
0.3543 2.842	0.3753 2.838	0.3972 2.834	0.4201 2.841	0.4427 2.848
0.3547 2.846	0.3759 2.835	0.3975 2.840	0.4205 2.840	0.4431 2.853
0.3551 2.845	0.3765 2.833	0.3979 2.843	0.4209 2.839	0.4437 2.848
0.3554 2.852	0.3769 2.830	0.3985 2.843	0.4213 2.837	0.4442 2.851
0.3558 2.847	0.3773 2.829	0.3991 2.845	0.4216 2.832	0.4448 2.846
0.3562 2.851	0.3776 2.828	0.3994 2.842	0.4220 2.830	0.4454 2.845
0.3566 2.847	0.3782 2.822	0.3998 2.847	0.4224 2.823	0.4458 2.840
0.3572 2.852	0.3788 2.818	0.4002 2.842	0.4228 2.828	0.4461 2.835
0.3577 2.852	0.3792 2.815	0.4008 2.846	0.4232 2.832	0.4465 2.838
0.3581 2.848	0.3798 2.821	0.4016 2.842	0.4236 2.842	0.4471 2.832
0.3585 2.847	0.3803 2.822	0.4021 2.845	0.4239 2.841	0.4479 2.838
0.3591 2.846	0.3809 2.824	0.4031 2.839	0.4245 2.848	0.4484 2.841
0.3597 2.847	0.3815 2.827	0.4037 2.841	0.4253 2.851	0.4488 2.843
0.3600 2.843	0.3818 2.832	0.4040 2.835	0.4259 2.849	0.4492 2.839
0.3604 2.840	0.3822 2.828	0.4046 2.827	0.4262 2.845	0.4496 2.847
0.3608 2.837	0.3826 2.835	0.4052 2.822	0.4268 2.850	0.4500 2.852
0.3612 2.839	0.3830 2.835	0.4056 2.827	0.4274 2.850	0.4504 2.844

0.4507 2.846	0.4731 2.834	0.4940 2.866	0.5156 2.859	0.5416 2.875
0.4511 2.848	0.4739 2.834	0.4944 2.875	0.5160 2.855	0.5420 2.874
0.4515 2.850	0.4745 2.833	0.4947 2.870	0.5164 2.865	0.5483 2.877
0.4525 2.853	0.4748 2.841	0.4951 2.877	0.5168 2.862	0.5489 2.884
0.4530 2.851	0.4752 2.847	0.4955 2.866	0.5171 2.867	0.5493 2.873
0.4534 2.859	0.4756 2.852	0.4959 2.857	0.5175 2.877	0.5497 2.879
0.4540 2.858	0.4760 2.859	0.4963 2.841	0.5179 2.886	0.5500 2.865
0.4546 2.857	0.4764 2.858	0.4967 2.833	0.5183 2.886	0.5504 2.867
0.4551 2.846	0.4769 2.852	0.4970 2.824	0.5187 2.885	0.5510 2.870
0.4557 2.844	0.4775 2.857	0.4974 2.809	0.5190 2.887	0.5516 2.861
0.4561 2.839	0.4781 2.861	0.4978 2.812	0.5194 2.882	0.5520 2.853
0.4565 2.842	0.4787 2.859	0.4982 2.826	0.5198 2.879	0.5523 2.837
0.4570 2.844	0.4791 2.855	0.4986 2.835	0.5202 2.888	0.5527 2.839
0.4578 2.845	0.4794 2.856	0.4990 2.837	0.5206 2.879	0.5531 2.849
0.4584 2.839	0.4798 2.864	0.4993 2.849	0.5210 2.891	0.5535 2.853
0.4588 2.840	0.4802 2.852	0.4997 2.856	0.5213 2.887	0.5539 2.866
0.4592 2.834	0.4806 2.860	0.5026 2.853	0.5217 2.877	0.5544 2.877
0.4595 2.831	0.4810 2.856	0.5030 2.858	0.5221 2.878	0.5550 2.885
0.4599 2.831	0.4814 2.848	0.5034 2.869	0.5225 2.861	0.5554 2.893
0.4603 2.826	0.4817 2.855	0.5037 2.881	0.5229 2.849	0.5558 2.890
0.4607 2.824	0.4821 2.858	0.5041 2.876	0.5233 2.840	0.5563 2.890
0.4611 2.832	0.4825 2.853	0.5047 2.879	0.5236 2.832	0.5569 2.890
0.4615 2.841	0.4829 2.844	0.5053 2.880	0.5240 2.814	0.5573 2.881
0.4618 2.844	0.4835 2.830	0.5056 2.874	0.5244 2.795	0.5577 2.886
0.4624 2.849	0.4840 2.827	0.5060 2.870	0.5248 2.790	0.5581 2.891
0.4630 2.848	0.4844 2.826	0.5064 2.864	0.5252 2.802	0.5585 2.897
0.4634 2.851	0.4850 2.829	0.5068 2.868	0.5256 2.817	0.5588 2.889
0.4637 2.849	0.4856 2.833	0.5074 2.868	0.5259 2.831	0.5592 2.900
0.4644 2.850	0.4859 2.834	0.5079 2.865	0.5263 2.852	0.5596 2.908
0.4649 2.860	0.4863 2.837	0.5083 2.859	0.5267 2.869	0.5600 2.898
0.4655 2.866	0.4867 2.841	0.5091 2.854	0.5271 2.868	0.5604 2.887
0.4660 2.870	0.4871 2.839	0.5095 2.842	0.5275 2.879	0.5608 2.889
0.4664 2.869	0.4875 2.832	0.5099 2.839	0.5278 2.896	0.5611 2.897
0.4668 2.863	0.4879 2.833	0.5102 2.824	0.5290 2.891	0.5615 2.887
0.4672 2.863	0.4884 2.842	0.5106 2.807	0.5321 2.905	0.5619 2.879
0.4676 2.867	0.4890 2.849	0.5110 2.798	0.5324 2.896	0.5623 2.869
0.4680 2.858	0.4896 2.853	0.5114 2.800	0.5332 2.881	0.5627 2.878
0.4683 2.866	0.4902 2.865	0.5118 2.807	0.5336 2.897	0.5631 2.874
0.4689 2.858	0.4905 2.864	0.5122 2.824	0.5340 2.885	0.5634 2.884
0.4695 2.836	0.4909 2.870	0.5125 2.839	0.5347 2.895	0.5638 2.886
0.4699 2.829	0.4913 2.875	0.5129 2.845	0.5351 2.875	0.5642 2.890
0.4703 2.829	0.4917 2.872	0.5133 2.848	0.5355 2.871	0.5646 2.885
0.4706 2.825	0.4921 2.876	0.5137 2.854	0.5359 2.874	0.5650 2.879
0.4712 2.829	0.4925 2.877	0.5141 2.856	0.5363 2.887	0.5653 2.882
0.4718 2.832	0.4928 2.875	0.5145 2.866	0.5367 2.874	0.5657 2.880
0.4722 2.832	0.4932 2.871	0.5148 2.859	0.5409 2.869	0.5661 2.883
0.4726 2.830	0.4936 2.876	0.5152 2.855	0.5412 2.871	0.5665 2.879

0.5669 2.868	0.5891 2.904	0.3205 2.856	0.3437 2.810	0.3663 2.859
0.5674 2.879	0.5896 2.898	0.3210 2.853	0.3441 2.811	0.3668 2.851
0.5680 2.878	0.5902 2.903	0.3214 2.849	0.3446 2.813	0.3672 2.839
0.5686 2.891	0.5908 2.908	0.3219 2.851	0.3450 2.814	0.3677 2.837
0.5692 2.912	0.5912 2.896	0.3224 2.860	0.3455 2.823	0.3684 2.833
0.5696 2.910	0.5915 2.901	0.3228 2.858	0.3459 2.832	0.3690 2.831
0.5699 2.906	0.5919 2.888	0.3233 2.865	0.3464 2.847	0.3695 2.824
0.5703 2.902	0.5923 2.886	0.3240 2.866	0.3468 2.851	0.3699 2.825
0.5707 2.905	0.5927 2.890	0.3246 2.868	0.3473 2.846	0.3704 2.828
0.5711 2.900	0.5931 2.886	0.3251 2.859	0.3477 2.848	0.3709 2.832
0.5715 2.902	0.5936 2.882	0.3255 2.860	0.3482 2.856	0.3713 2.842
0.5720 2.914	0.5942 2.864	0.3262 2.854	0.3486 2.860	0.3718 2.836
0.5726 2.918	0.5946 2.854	0.3269 2.844	0.3491 2.857	0.3722 2.829
0.5730 2.914	0.5950 2.860	0.3273 2.835	0.3497 2.859	0.3727 2.833
0.5734 2.908	0.5954 2.856	0.3278 2.827	0.3505 2.862	0.3734 2.832
0.5738 2.909	0.5961 2.869	0.3283 2.819	0.3509 2.864	0.3743 2.840
0.5745 2.907	0.5965 2.878	0.3287 2.822	0.3514 2.861	0.3749 2.851
0.5749 2.913	0.5969 2.884	0.3292 2.822	0.3518 2.864	0.3754 2.856
0.5753 2.911	0.5973 2.891	0.3296 2.814	0.3523 2.861	0.3758 2.853
0.5761 2.922	0.5977 2.896	0.3301 2.791	0.3527 2.856	0.3763 2.858
0.5764 2.914	0.5984 2.888	0.3305 2.796	0.3532 2.842	0.3767 2.850
0.5768 2.910	0.5988 2.900	0.3310 2.797	0.3536 2.839	0.3772 2.855
0.5772 2.906	0.5992 2.899	0.3314 2.802	0.3541 2.836	0.3776 2.855
0.5776 2.906	0.5996 2.909	0.3319 2.809	0.3545 2.838	0.3781 2.852
0.5784 2.906	0.6000 2.909	0.3323 2.820	0.3550 2.835	0.3788 2.858
0.5787 2.904	0.6004 2.916	0.3328 2.835	0.3557 2.826	0.3795 2.863
0.5793 2.898	0.6007 2.921	0.3335 2.842	0.3563 2.822	0.3799 2.857
0.5797 2.893	0.6011 2.916	0.3341 2.842	0.3568 2.830	0.3804 2.859
0.5801 2.882	0.6017 2.917	0.3348 2.845	0.3573 2.831	0.3810 2.854
0.5804 2.877	0.6023 2.909	0.3355 2.843	0.3577 2.828	0.3817 2.853
0.5812 2.875	0.6027 2.906	0.3360 2.849	0.3582 2.826	0.3822 2.844
0.5816 2.874	0.6030 2.912	0.3364 2.855	0.3586 2.817	0.3826 2.840
0.5820 2.883	0.6034 2.920	0.3369 2.851	0.3591 2.820	0.3831 2.834
0.5824 2.894	0.6038 2.915	0.3373 2.851	0.3595 2.823	0.3835 2.836
0.5827 2.905	0.6042 2.928	0.3378 2.863	0.3600 2.831	0.3840 2.839
0.5831 2.907	0.6047 2.921	0.3382 2.865	0.3604 2.838	0.3844 2.848
0.5839 2.905	0.6057 2.919	0.3387 2.871	0.3609 2.842	0.3849 2.847
0.5843 2.905	0.6061 2.920	0.3391 2.861	0.3613 2.850	0.3853 2.843
0.5847 2.894	2453849+	0.3396 2.852	0.3618 2.854	0.3858 2.840
0.5850 2.898	0.3164 2.797	0.3400 2.857	0.3622 2.854	0.3863 2.838
0.5854 2.890	0.3169 2.799	0.3405 2.846	0.3627 2.852	0.3867 2.835
0.5858 2.897	0.3174 2.811	0.3409 2.843	0.3634 2.849	0.3872 2.836
0.5862 2.904	0.3178 2.829	0.3414 2.836	0.3641 2.851	0.3878 2.840
0.5868 2.908	0.3183 2.829	0.3418 2.822	0.3645 2.858	0.3890 2.842
0.5873 2.907	0.3187 2.846	0.3423 2.818	0.3650 2.854	0.3894 2.849
0.5879 2.908	0.3192 2.849	0.3428 2.825	0.3654 2.861	0.3899 2.851
0.5885 2.916	0.3198 2.855	0.3432 2.817	0.3659 2.860	0.3903 2.847

0.3908 2.848	0.4221 2.859	0.4468 2.874	0.5016 2.868	0.5265 2.884
0.3912 2.843	0.4228 2.864	0.4475 2.870	0.5020 2.860	0.5269 2.888
0.3967 2.838	0.4232 2.859	0.4482 2.867	0.5025 2.846	0.5274 2.885
0.3974 2.837	0.4240 2.857	0.4486 2.870	0.5029 2.842	0.5281 2.887
0.3978 2.845	0.4246 2.852	0.4491 2.874	0.5034 2.838	0.5288 2.891
0.3983 2.839	0.4251 2.848	0.4495 2.873	0.5038 2.827	0.5292 2.890
0.3987 2.835	0.4255 2.846	0.4500 2.879	0.5043 2.830	0.5297 2.881
0.3992 2.842	0.4260 2.854	0.4507 2.880	0.5047 2.839	0.5301 2.871
0.3996 2.837	0.4264 2.856	0.4810 2.831	0.5052 2.834	0.5306 2.855
0.4001 2.837	0.4269 2.862	0.4815 2.830	0.5056 2.837	0.5310 2.838
0.4006 2.835	0.4273 2.858	0.4822 2.842	0.5061 2.833	0.5317 2.832
0.4010 2.837	0.4278 2.862	0.4830 2.866	0.5065 2.837	0.5324 2.834
0.4017 2.842	0.4282 2.857	0.4837 2.874	0.5070 2.845	0.5328 2.832
0.4026 2.851	0.4287 2.852	0.4842 2.870	0.5075 2.846	0.5333 2.836
0.4035 2.853	0.4291 2.855	0.4849 2.877	0.5079 2.842	0.5337 2.842
0.4042 2.851	0.4298 2.852	0.4857 2.879	0.5084 2.833	0.5342 2.843
0.4046 2.851	0.4305 2.857	0.4862 2.882	0.5088 2.842	0.5346 2.847
0.4051 2.850	0.4309 2.864	0.4866 2.877	0.5093 2.859	0.5353 2.855
0.4055 2.852	0.4314 2.861	0.4871 2.875	0.5097 2.860	0.5360 2.858
0.4060 2.852	0.4318 2.867	0.4875 2.880	0.5102 2.867	0.5365 2.863
0.4064 2.854	0.4323 2.861	0.4880 2.872	0.5109 2.870	0.5369 2.877
0.4069 2.850	0.4328 2.867	0.4884 2.859	0.5115 2.869	0.5374 2.883
0.4076 2.857	0.4332 2.869	0.4891 2.853	0.5120 2.872	0.5383 2.896
0.4083 2.856	0.4337 2.866	0.4898 2.844	0.5109 2.870	0.5387 2.897
0.4087 2.862	0.4343 2.865	0.4902 2.843	0.5133 2.875	0.5392 2.896
0.4094 2.855	0.4352 2.866	0.4907 2.840	0.5140 2.881	0.5401 2.890
0.4103 2.852	0.4359 2.864	0.4911 2.842	0.5147 2.875	0.5405 2.889
0.4110 2.848	0.4364 2.868	0.4916 2.840	0.5152 2.881	0.5410 2.881
0.4114 2.846	0.4368 2.871	0.4921 2.831	0.5159 2.866	0.5414 2.885
0.4119 2.844	0.4373 2.866	0.4925 2.827	0.5165 2.855	0.5419 2.888
0.4126 2.846	0.4377 2.859	0.4930 2.821	0.5170 2.849	0.5423 2.881
0.4132 2.848	0.4382 2.858	0.4934 2.806	0.5174 2.831	0.5428 2.879
0.4137 2.851	0.4386 2.856	0.4939 2.796	0.5179 2.828	0.5435 2.872
0.4142 2.852	0.4393 2.856	0.4943 2.804	0.5186 2.829	0.5442 2.870
0.4146 2.851	0.4400 2.861	0.4948 2.828	0.5192 2.832	0.5446 2.859
0.4153 2.852	0.4405 2.855	0.4952 2.844	0.5197 2.831	0.5451 2.849
0.4160 2.851	0.4409 2.857	0.4957 2.845	0.5204 2.837	0.5458 2.826
0.4164 2.851	0.4416 2.850	0.4961 2.859	0.5210 2.845	0.5464 2.839
0.4169 2.854	0.4423 2.858	0.4966 2.868	0.5215 2.851	0.5469 2.839
0.4176 2.858	0.4427 2.861	0.4970 2.869	0.5222 2.852	0.5476 2.852
0.4182 2.864	0.4432 2.863	0.4984 2.878	0.5229 2.865	0.5482 2.858
0.4187 2.861	0.4436 2.870	0.4988 2.877	0.5236 2.874	0.5487 2.864
0.4191 2.859	0.4441 2.873	0.4993 2.882	0.5242 2.877	0.5492 2.863
0.4196 2.858	0.4445 2.880	0.4998 2.871	0.5247 2.885	0.5496 2.865
0.4203 2.855	0.4450 2.883	0.5002 2.882	0.5251 2.891	0.5503 2.876
0.4210 2.856	0.4454 2.880	0.5007 2.883	0.5256 2.883	0.5511 2.886
0.4214 2.858	0.4461 2.875	0.5011 2.881	0.5260 2.888	0.5519 2.888

0.5523 2.886	0.5806 2.889	0.3828 2.833	0.4102 2.833	0.4360 2.810
0.5528 2.887	0.5810 2.885	0.3834 2.830	0.4106 2.829	0.4366 2.813
0.5532 2.893	0.5815 2.889	0.3839 2.830	0.4111 2.827	0.4374 2.820
0.5537 2.892	0.5819 2.889	0.3846 2.835	0.4115 2.819	0.4378 2.820
0.5541 2.892	0.5824 2.888	0.3855 2.842	0.4120 2.822	0.4383 2.816
0.5546 2.888	0.5829 2.891	0.3862 2.844	0.4124 2.826	0.4387 2.821
0.5550 2.884	0.5833 2.888	0.3868 2.838	0.4131 2.830	0.4392 2.825
0.5555 2.878	0.5838 2.894	0.3875 2.837	0.4138 2.835	0.4396 2.826
0.5560 2.872	0.5842 2.889	0.3880 2.838	0.4145 2.839	0.4401 2.824
0.5566 2.874	0.5847 2.885	0.3884 2.838	0.4152 2.841	0.4405 2.826
0.5573 2.872	0.5851 2.882	0.3891 2.838	0.4158 2.840	0.4414 2.832
0.5578 2.869	0.5856 2.886	0.3898 2.838	0.4165 2.841	0.4419 2.836
0.5585 2.860	0.5860 2.889	0.3907 2.836	0.4170 2.846	0.4428 2.840
0.5591 2.851	0.5865 2.892	0.3911 2.842	0.4174 2.840	0.4433 2.838
0.5596 2.847	0.5870 2.885	0.3916 2.841	0.4179 2.839	0.4437 2.840
0.5602 2.855	0.5877 2.891	0.3921 2.843	0.4183 2.841	0.4442 2.836
0.5610 2.862	0.5885 2.884	0.3925 2.840	0.4190 2.840	0.4446 2.831
0.5615 2.871	0.5891 2.882	0.3934 2.831	0.4197 2.838	0.4451 2.832
0.5619 2.873	0.5898 2.888	0.3939 2.827	0.4204 2.831	0.4455 2.827
0.5628 2.873	0.5903 2.888	0.3943 2.827	0.4211 2.821	0.4460 2.826
0.5633 2.870	0.5907 2.878	0.3948 2.826	0.4215 2.818	0.4464 2.824
0.5638 2.878	0.5914 2.879	0.3952 2.823	0.4220 2.819	0.4469 2.825
0.5642 2.882	0.5921 2.882	0.3957 2.829	0.4224 2.821	0.4476 2.827
0.5649 2.885	0.5926 2.894	0.3961 2.834	0.4231 2.822	0.4482 2.826
0.5658 2.890	0.5933 2.891	0.3966 2.837	0.4238 2.821	0.4489 2.820
0.5665 2.895	0.5939 2.895	0.3970 2.832	0.4244 2.818	0.4496 2.818
0.5669 2.892	0.5944 2.899	0.3975 2.830	0.4251 2.813	0.4503 2.826
0.5676 2.885	0.5948 2.907	0.3979 2.829	0.4256 2.817	0.4512 2.830
0.5685 2.878	0.5953 2.903	0.3986 2.833	0.4260 2.823	0.4519 2.825
0.5692 2.882	0.5958 2.900	0.3995 2.837	0.4265 2.825	0.4525 2.829
0.5697 2.877	0.5964 2.907	0.4002 2.836	0.4270 2.828	0.4532 2.832
0.5703 2.872	0.5971 2.901	0.4007 2.846	0.4244 2.818	0.4537 2.833
0.5713 2.877	0.5976 2.902	0.4014 2.852	0.4283 2.838	0.4541 2.837
0.5719 2.877	0.5980 2.898	0.4022 2.849	0.4288 2.841	0.4548 2.841
0.5726 2.862	0.5985 2.893	0.4031 2.850	0.4292 2.837	0.4555 2.839
0.5733 2.856	0.5990 2.893	0.4038 2.847	0.4297 2.838	0.4559 2.837
0.5738 2.862	0.5999 2.883	0.4043 2.848	0.4304 2.841	0.4564 2.839
0.5742 2.860	0.6003 2.881	0.4047 2.852	0.4310 2.840	0.4569 2.834
0.5749 2.864	0.6010 2.884	0.4054 2.852	0.4315 2.835	0.4573 2.832
0.5756 2.868	0.6017 2.884	0.4061 2.845	0.4321 2.836	0.4580 2.829
0.5763 2.860	0.6022 2.878	0.4066 2.837	0.4328 2.836	0.4587 2.827
0.5769 2.858	2453850 +	0.4070 2.832	0.4333 2.837	0.4591 2.829
0.5774 2.867	0.3798 2.828	0.4075 2.825	0.4337 2.832	0.4596 2.825
0.5781 2.874	0.3803 2.833	0.4079 2.826	0.4342 2.831	0.4602 2.827
0.5788 2.883	0.3810 2.826	0.4084 2.826	0.4347 2.828	0.4612 2.826
0.5792 2.889	0.3816 2.833	0.4088 2.828	0.4351 2.817	0.4618 2.819
0.5799 2.886	0.3821 2.835	0.4095 2.828	0.4356 2.810	0.4623 2.824

0.4627 2.822	0.4886 2.823	0.5121 2.809	0.5380 2.816	0.5629 2.870
0.4632 2.818	0.4893 2.827	0.5129 2.796	0.5385 2.803	0.5634 2.873
0.4639 2.826	0.4899 2.832	0.5137 2.789	0.5389 2.794	0.5638 2.870
0.4646 2.833	0.4904 2.835	0.5141 2.791	0.5396 2.799	0.5643 2.870
0.4652 2.841	0.4908 2.842	0.5146 2.801	0.5403 2.811	0.5648 2.865
0.4659 2.844	0.4913 2.849	0.5150 2.814	0.5407 2.822	0.5652 2.860
0.4664 2.840	0.4917 2.847	0.5155 2.825	0.5412 2.821	0.5657 2.850
0.4670 2.839	0.4922 2.855	0.5159 2.835	0.5419 2.824	0.5661 2.851
0.4677 2.842	0.4926 2.858	0.5164 2.836	0.5425 2.829	0.5668 2.848
0.4682 2.837	0.4931 2.851	0.5168 2.842	0.5430 2.838	0.5677 2.859
0.4689 2.839	0.4938 2.852	0.5173 2.847	0.5435 2.850	0.5684 2.862
0.4695 2.838	0.4945 2.851	0.5177 2.854	0.5444 2.861	0.5688 2.864
0.4700 2.828	0.4951 2.849	0.5184 2.857	0.5448 2.862	0.5693 2.865
0.4704 2.833	0.4958 2.838	0.5193 2.859	0.5453 2.868	0.5697 2.870
0.4709 2.829	0.4963 2.840	0.5200 2.859	0.5457 2.860	0.5702 2.872
0.4713 2.825	0.4967 2.832	0.5204 2.860	0.5462 2.860	0.5709 2.870
0.4720 2.816	0.4972 2.834	0.5209 2.863	0.5466 2.859	0.5716 2.876
0.4727 2.796	0.4976 2.827	0.5214 2.863	0.5471 2.870	0.5720 2.880
0.4732 2.803	0.4984 2.818	0.5218 2.867	0.5475 2.867	0.5729 2.878
0.4736 2.804	0.4992 2.809	0.5223 2.862	0.5480 2.867	0.5734 2.883
0.4742 2.817	0.4996 2.793	0.5227 2.856	0.5484 2.868	0.5741 2.882
0.4750 2.824	0.5001 2.792	0.5232 2.854	0.5489 2.866	0.5747 2.884
0.4754 2.829	0.5005 2.793	0.5236 2.845	0.5496 2.866	0.5752 2.880
0.4759 2.828	0.5010 2.801	0.5241 2.827	0.5503 2.868	0.5756 2.875
0.4763 2.827	0.5014 2.808	0.5245 2.797	0.5507 2.857	0.5761 2.878
0.4768 2.829	0.5019 2.813	0.5250 2.788	0.5512 2.842	0.5765 2.882
0.4772 2.835	0.5023 2.826	0.5254 2.793	0.5516 2.815	0.5770 2.886
0.4777 2.840	0.5028 2.834	0.5259 2.792	0.5522 2.813	0.5775 2.881
0.4786 2.845	0.5032 2.836	0.5263 2.794	0.5530 2.809	0.5779 2.885
0.4795 2.849	0.5037 2.850	0.5268 2.803	0.5534 2.817	0.5784 2.877
0.4800 2.846	0.5041 2.850	0.5275 2.813	0.5539 2.823	0.5790 2.868
0.4804 2.848	0.5046 2.848	0.5284 2.821	0.5543 2.837	0.5797 2.868
0.4809 2.845	0.5050 2.845	0.5291 2.836	0.5548 2.844	0.5802 2.867
0.4813 2.846	0.5055 2.845	0.5295 2.845	0.5554 2.851	0.5806 2.869
0.4818 2.850	0.5059 2.853	0.5300 2.849	0.5561 2.847	0.5813 2.867
0.4822 2.846	0.5064 2.853	0.5304 2.847	0.5566 2.851	0.5820 2.866
0.4827 2.837	0.5069 2.854	0.5326 2.859	0.5570 2.856	0.5824 2.872
0.4836 2.832	0.5073 2.854	0.5330 2.864	0.5575 2.865	0.5829 2.875
0.4840 2.829	0.5078 2.853	0.5335 2.862	0.5582 2.865	0.5833 2.871
0.4845 2.825	0.5082 2.854	0.5339 2.858	0.5589 2.870	0.5838 2.866
0.4849 2.817	0.5087 2.848	0.5344 2.866	0.5593 2.876	0.5845 2.866
0.4854 2.807	0.5091 2.847	0.5348 2.869	0.5598 2.882	0.5852 2.868
0.4858 2.794	0.5096 2.851	0.5353 2.869	0.5602 2.877	0.5856 2.867
0.4863 2.782	0.5100 2.844	0.5357 2.863	0.5609 2.872	0.5865 2.874
0.4868 2.787	0.5105 2.833	0.5364 2.856	0.5616 2.872	0.5870 2.879
0.4874 2.808	0.5109 2.826	0.5371 2.844	0.5620 2.875	0.5874 2.879
0.4881 2.821	0.5114 2.816	0.5376 2.842	0.5625 2.869	0.5879 2.872

0.5888 2.881	0.3471 2.826	0.3684 2.859	0.4038 2.840	0.4251 2.859
0.5892 2.879	0.3475 2.824	0.3688 2.859	0.4043 2.832	0.4256 2.863
0.5897 2.880	0.3480 2.818	0.3693 2.864	0.4047 2.827	0.4260 2.861
0.5902 2.883	0.3484 2.809	0.3697 2.865	0.4052 2.829	0.4265 2.853
0.5906 2.882	0.3489 2.810	0.3702 2.860	0.4056 2.843	0.4269 2.847
0.5911 2.885	0.3493 2.811	0.3706 2.863	0.4061 2.843	0.4274 2.838
0.5915 2.893	0.3498 2.826	0.3711 2.857	0.4065 2.842	0.4278 2.842
0.5920 2.886	0.3502 2.831	0.3715 2.857	0.4070 2.851	0.4283 2.838
0.5927 2.890	0.3507 2.835	0.3720 2.852	0.4075 2.847	0.4287 2.846
0.5933 2.879	0.3511 2.837	0.3724 2.848	0.4079 2.860	0.4292 2.843
0.5938 2.867	0.3516 2.841	0.3729 2.840	0.4084 2.849	0.4296 2.836
0.5942 2.870	0.3520 2.832	0.3733 2.839	0.4088 2.852	0.4301 2.844
0.5949 2.873	0.3525 2.835	0.3738 2.842	0.4093 2.848	0.4306 2.839
0.5956 2.875	0.3530 2.834	0.3742 2.844	0.4097 2.857	0.4310 2.838
2453851 +	0.3534 2.837	0.3747 2.842	0.4102 2.859	0.4315 2.837
0.3321 2.836	0.3539 2.849	0.3751 2.837	0.4106 2.860	0.4319 2.836
0.3326 2.832	0.3543 2.854	0.3756 2.830	0.4111 2.862	0.4324 2.828
0.3330 2.828	0.3548 2.859	0.3760 2.820	0.4115 2.864	0.4328 2.843
0.3335 2.818	0.3552 2.857	0.3765 2.830	0.4120 2.856	0.4333 2.840
0.3339 2.818	0.3557 2.858	0.3770 2.825	0.4124 2.856	0.4337 2.850
0.3344 2.814	0.3561 2.860	0.3774 2.810	0.4129 2.856	0.4342 2.848
0.3348 2.817	0.3566 2.864	0.3779 2.820	0.4133 2.851	0.4346 2.856
0.3353 2.814	0.3570 2.870	0.3783 2.846	0.4138 2.849	0.4351 2.853
0.3357 2.823	0.3575 2.855	0.3788 2.841	0.4142 2.838	0.4355 2.855
0.3362 2.831	0.3579 2.857	0.3792 2.840	0.4147 2.829	0.4360 2.847
0.3366 2.821	0.3584 2.853	0.3797 2.836	0.4152 2.836	0.4364 2.851
0.3371 2.827	0.3588 2.843	0.3801 2.851	0.4156 2.837	0.4369 2.848
0.3375 2.826	0.3593 2.839	0.3806 2.841	0.4161 2.843	0.4373 2.855
0.3380 2.832	0.3597 2.841	0.3810 2.893	0.4165 2.848	0.4378 2.864
0.3385 2.827	0.3602 2.848	0.3815 2.860	0.4170 2.841	0.4383 2.856
0.3389 2.836	0.3607 2.833	0.3819 2.861	0.4174 2.833	0.4387 2.861
0.3394 2.841	0.3611 2.835	0.3846 2.837	0.4179 2.833	0.4392 2.855
0.3398 2.850	0.3616 2.832	0.3884 2.834	0.4183 2.835	0.4396 2.858
0.3403 2.853	0.3620 2.828	0.3908 2.823	0.4188 2.826	0.4401 2.854
0.3407 2.858	0.3625 2.823	0.3913 2.851	0.4192 2.835	0.4405 2.854
0.3412 2.861	0.3629 2.815	0.3917 2.865	0.4197 2.834	0.4410 2.842
0.3416 2.863	0.3634 2.823	0.3922 2.825	0.4201 2.837	0.4414 2.840
0.3425 2.862	0.3638 2.826	0.3931 2.863	0.4206 2.848	0.4419 2.826
0.3430 2.863	0.3643 2.836	0.3937 2.851	0.4210 2.846	0.4423 2.828
0.3434 2.859	0.3647 2.835	0.3942 2.878	0.4215 2.857	0.4428 2.830
0.3439 2.865	0.3652 2.835	0.3986 2.866	0.4219 2.850	0.4432 2.839
0.3443 2.852	0.3656 2.828	0.4011 2.819	0.4224 2.850	0.4437 2.833
0.3448 2.840	0.3661 2.841	0.4016 2.805	0.4229 2.858	0.4441 2.841
0.3452 2.836	0.3665 2.844	0.4020 2.841	0.4233 2.859	0.4446 2.838
0.3457 2.828	0.3670 2.837	0.4025 2.865	0.4238 2.860	0.4450 2.835
0.3462 2.831	0.3674 2.849	0.4029 2.846	0.4242 2.854	0.4455 2.830
0.3466 2.829	0.3679 2.848	0.4034 2.840	0.4247 2.867	0.4460 2.836

0.4464 2.842	0.4677 2.819	0.4890 2.861	0.5103 2.813	0.5316 2.873
0.4469 2.845	0.4681 2.813	0.4894 2.860	0.5107 2.820	0.5320 2.878
0.4473 2.851	0.4686 2.813	0.4899 2.864	0.5112 2.834	0.5325 2.869
0.4478 2.857	0.4690 2.808	0.4903 2.871	0.5116 2.831	0.5329 2.867
0.4482 2.859	0.4695 2.802	0.4908 2.868	0.5121 2.837	0.5334 2.862
0.4487 2.854	0.4700 2.803	0.4912 2.867	0.5125 2.848	0.5338 2.850
0.4491 2.855	0.4704 2.811	0.4917 2.857	0.5130 2.857	0.5343 2.838
0.4496 2.860	0.4709 2.828	0.4921 2.852	0.5134 2.857	0.5347 2.813
0.4500 2.863	0.4713 2.843	0.4926 2.853	0.5139 2.874	0.5352 2.810
0.4505 2.861	0.4718 2.843	0.4931 2.840	0.5144 2.873	0.5356 2.822
0.4509 2.854	0.4722 2.843	0.4935 2.815	0.5148 2.877	0.5361 2.826
0.4514 2.853	0.4727 2.848	0.4940 2.808	0.5153 2.880	0.5366 2.834
0.4518 2.858	0.4731 2.857	0.4944 2.794	0.5157 2.877	0.5370 2.832
0.4523 2.849	0.4736 2.859	0.4949 2.798	0.5162 2.881	0.5375 2.844
0.4527 2.847	0.4740 2.856	0.4953 2.786	0.5166 2.883	0.5379 2.846
0.4532 2.841	0.4745 2.856	0.4958 2.788	0.5171 2.880	0.5384 2.844
0.4537 2.851	0.4749 2.864	0.4962 2.784	0.5175 2.881	0.5388 2.846
0.4541 2.832	0.4754 2.857	0.4967 2.782	0.5180 2.879	0.5393 2.844
0.4546 2.835	0.4758 2.870	0.4971 2.793	0.5184 2.871	0.5397 2.846
0.4550 2.837	0.4763 2.866	0.4976 2.814	0.5189 2.864	0.5402 2.851
0.4554 2.820	0.4767 2.859	0.4980 2.825	0.5193 2.870	0.5406 2.867
0.4559 2.815	0.4772 2.856	0.4985 2.833	0.5198 2.855	0.5411 2.861
0.4564 2.809	0.4777 2.857	0.4989 2.846	0.5202 2.829	0.5415 2.862
0.4568 2.822	0.4781 2.860	0.4994 2.849	0.5207 2.814	0.5420 2.874
0.4573 2.816	0.4786 2.850	0.4998 2.853	0.5211 2.801	0.5424 2.868
0.4577 2.824	0.4790 2.843	0.5003 2.859	0.5216 2.791	0.5429 2.872
0.4582 2.827	0.4795 2.837	0.5008 2.865	0.5221 2.795	0.5433 2.877
0.4586 2.827	0.4799 2.827	0.5012 2.870	0.5225 2.803	0.5438 2.870
0.4591 2.841	0.4804 2.835	0.5017 2.858	0.5230 2.803	0.5442 2.873
0.4595 2.848	0.4808 2.826	0.5021 2.863	0.5234 2.811	0.5447 2.873
0.4600 2.846	0.4813 2.825	0.5026 2.869	0.5239 2.814	0.5452 2.873
0.4604 2.846	0.4817 2.811	0.5030 2.869	0.5243 2.824	0.5456 2.860
0.4609 2.849	0.4822 2.804	0.5035 2.871	0.5248 2.827	0.5461 2.864
0.4613 2.856	0.4826 2.803	0.5039 2.871	0.5252 2.839	0.5465 2.869
0.4618 2.855	0.4831 2.808	0.5044 2.864	0.5257 2.852	0.5470 2.861
0.4622 2.860	0.4835 2.807	0.5048 2.864	0.5261 2.853	0.5474 2.862
0.4627 2.862	0.4840 2.814	0.5053 2.866	0.5266 2.857	0.5479 2.846
0.4632 2.863	0.4844 2.827	0.5057 2.861	0.5270 2.868	0.5483 2.840
0.4636 2.866	0.4849 2.831	0.5062 2.851	0.5275 2.879	0.5488 2.838
0.4641 2.860	0.4854 2.843	0.5066 2.841	0.5279 2.874	0.5492 2.829
0.4645 2.857	0.4858 2.850	0.5071 2.822	0.5284 2.873	0.5497 2.830
0.4650 2.850	0.4863 2.854	0.5076 2.809	0.5289 2.879	0.5501 2.829
0.4654 2.843	0.4867 2.856	0.5080 2.800	0.5293 2.878	0.5506 2.845
0.4659 2.843	0.4872 2.858	0.5085 2.800	0.5298 2.869	0.5511 2.847
0.4663 2.835	0.4876 2.858	0.5089 2.806	0.5302 2.878	0.5515 2.844
0.4668 2.830	0.4881 2.859	0.5094 2.814	0.5307 2.878	0.5520 2.841
0.4672 2.819	0.4885 2.864	0.5098 2.814	0.5311 2.875	0.5524 2.840

0.5529 2.845	0.5742 2.887	0.5955 2.855	0.3448 2.835	0.3520 2.898
0.5533 2.848	0.5746 2.883	0.5960 2.866	0.3450 2.844	0.3522 2.889
0.5538 2.840	0.5751 2.880	0.5965 2.877	0.3451 2.843	0.3523 2.904
0.5542 2.850	0.5755 2.875	0.5969 2.886	0.3453 2.847	0.3525 2.905
0.5547 2.864	0.5760 2.870	0.5974 2.892	0.3455 2.826	0.3526 2.896
0.5551 2.868	0.5764 2.865	0.5979 2.876	0.3456 2.854	0.3528 2.894
0.5556 2.875	0.5769 2.843	0.5983 2.889	0.3458 2.831	0.3529 2.895
0.5560 2.868	0.5774 2.849	0.5988 2.888	0.3459 2.835	0.3531 2.899
0.5565 2.875	0.5778 2.847	0.5992 2.883	0.3461 2.864	0.3532 2.893
0.5569 2.870	0.5783 2.835	0.5997 2.892	0.3462 2.853	0.3534 2.877
0.5574 2.877	0.5787 2.843	0.6001 2.896	0.3464 2.873	0.3535 2.911
0.5578 2.870	0.5792 2.853	2453930 +	0.3465 2.866	0.3537 2.896
0.5583 2.873	0.5796 2.864	0.3395 2.904	0.3467 2.860	0.3538 2.895
0.5588 2.876	0.5801 2.853	0.3397 2.884	0.3468 2.886	0.3540 2.894
0.5592 2.871	0.5805 2.857	0.3398 2.893	0.3470 2.877	0.3541 2.889
0.5597 2.870	0.5810 2.847	0.3400 2.908	0.3471 2.879	0.3543 2.895
0.5601 2.870	0.5814 2.856	0.3401 2.889	0.3473 2.886	0.3544 2.887
0.5606 2.867	0.5819 2.867	0.3403 2.878	0.3474 2.893	0.3546 2.894
0.5610 2.865	0.5823 2.859	0.3404 2.877	0.3476 2.892	0.3550 2.890
0.5615 2.861	0.5828 2.873	0.3406 2.871	0.3477 2.883	0.3551 2.889
0.5620 2.847	0.5833 2.878	0.3407 2.856	0.3479 2.878	0.3553 2.876
0.5624 2.849	0.5837 2.887	0.3409 2.866	0.3480 2.879	0.3554 2.869
0.5629 2.829	0.5842 2.895	0.3410 2.873	0.3482 2.875	0.3556 2.862
0.5633 2.839	0.5846 2.882	0.3412 2.869	0.3483 2.876	0.3557 2.868
0.5638 2.834	0.5851 2.885	0.3413 2.865	0.3485 2.886	0.3559 2.866
0.5642 2.837	0.5855 2.891	0.3415 2.850	0.3487 2.885	0.3560 2.878
0.5647 2.840	0.5860 2.888	0.3416 2.855	0.3488 2.895	0.3562 2.872
0.5651 2.849	0.5864 2.882	0.3418 2.858	0.3490 2.888	0.3564 2.883
0.5656 2.853	0.5869 2.885	0.3420 2.869	0.3491 2.881	0.3565 2.887
0.5660 2.855	0.5873 2.886	0.3421 2.871	0.3493 2.878	0.3567 2.882
0.5665 2.851	0.5878 2.886	0.3423 2.870	0.3494 2.898	0.3568 2.863
0.5669 2.852	0.5882 2.881	0.3424 2.869	0.3496 2.891	0.3570 2.863
0.5674 2.859	0.5887 2.878	0.3426 2.855	0.3497 2.885	0.3571 2.866
0.5678 2.857	0.5892 2.882	0.3427 2.851	0.3499 2.889	0.3573 2.860
0.5683 2.866	0.5896 2.871	0.3429 2.853	0.3500 2.886	0.3574 2.878
0.5687 2.867	0.5901 2.871	0.3430 2.853	0.3502 2.900	0.3576 2.855
0.5692 2.873	0.5905 2.862	0.3432 2.853	0.3503 2.885	0.3577 2.838
0.5697 2.870	0.5910 2.847	0.3433 2.852	0.3505 2.906	0.3579 2.816
0.5701 2.869	0.5915 2.845	0.3435 2.823	0.3506 2.890	0.3580 2.808
0.5706 2.872	0.5919 2.837	0.3436 2.838	0.3508 2.886	0.3582 2.814
0.5710 2.872	0.5924 2.847	0.3438 2.834	0.3509 2.890	0.3583 2.810
0.5715 2.875	0.5928 2.849	0.3439 2.829	0.3511 2.898	0.3585 2.804
0.5719 2.872	0.5933 2.866	0.3441 2.823	0.3512 2.909	0.3586 2.818
0.5724 2.874	0.5937 2.859	0.3442 2.822	0.3514 2.877	0.3588 2.823
0.5728 2.885	0.5942 2.851	0.3444 2.828	0.3515 2.892	0.3589 2.816
0.5733 2.881	0.5946 2.853	0.3445 2.833	0.3517 2.889	0.3591 2.822
0.5737 2.877	0.5951 2.856	0.3447 2.826	0.3518 2.893	0.3592 2.836

0.3594 2.814	0.3666 2.897	0.3735 2.826	0.4102 2.856	0.3413 2.800
0.3596 2.815	0.3667 2.903	0.3738 2.761	0.4105 2.853	0.3415 2.816
0.3597 2.834	0.3669 2.890	0.3742 2.769	0.4109 2.841	0.3416 2.846
0.3599 2.841	0.3670 2.909	0.3746 2.762	0.4113 2.865	0.3418 2.807
0.3600 2.826	0.3672 2.899	0.3750 2.792	0.4117 2.864	0.3420 2.842
0.3602 2.845	0.3673 2.895	0.3754 2.773	0.4121 2.845	0.3421 2.835
0.3603 2.880	0.3675 2.885	0.3761 2.767	0.4125 2.882	0.3423 2.824
0.3605 2.850	0.3676 2.903	0.3765 2.748	2453934 +	0.3424 2.839
0.3606 2.891	0.3678 2.887	0.3769 2.773	0.3345 2.840	0.3426 2.823
0.3608 2.867	0.3679 2.887	0.3773 2.771	0.3346 2.862	0.3427 2.828
0.3609 2.880	0.3681 2.873	0.3781 2.755	0.3357 2.865	0.3429 2.841
0.3611 2.877	0.3682 2.880	0.3784 2.768	0.3358 2.868	0.3430 2.818
0.3612 2.893	0.3684 2.894	0.3788 2.765	0.3360 2.855	0.3432 2.825
0.3614 2.870	0.3685 2.880	0.3792 2.796	0.3362 2.855	0.3433 2.789
0.3615 2.899	0.3687 2.862	0.3796 2.803	0.3363 2.870	0.3435 2.818
0.3617 2.884	0.3688 2.889	0.3800 2.811	0.3365 2.864	0.3436 2.852
0.3618 2.884	0.3690 2.864	0.3804 2.804	0.3366 2.866	0.3438 2.843
0.3620 2.885	0.3691 2.883	0.3807 2.809	0.3368 2.844	0.3439 2.859
0.3621 2.906	0.3693 2.893	0.3811 2.787	0.3369 2.858	0.3441 2.852
0.3623 2.899	2453932 +	0.3864 2.776	0.3371 2.848	0.3442 2.859
0.3625 2.895	0.3624 2.701	0.3870 2.805	0.3372 2.828	0.3444 2.852
0.3626 2.914	0.3631 2.688	0.3874 2.789	0.3374 2.856	0.3445 2.850
0.3628 2.904	0.3635 2.717	0.3878 2.779	0.3375 2.845	0.3447 2.850
0.3629 2.923	0.3639 2.722	0.3881 2.786	0.3377 2.835	0.3448 2.855
0.3631 2.898	0.3643 2.675	0.3885 2.740	0.3378 2.863	0.3450 2.873
0.3632 2.910	0.3646 2.716	0.3889 2.771	0.3380 2.826	0.3452 2.848
0.3634 2.909	0.3650 2.765	0.3893 2.752	0.3381 2.837	0.3453 2.867
0.3635 2.909	0.3654 2.739	0.3902 2.757	0.3383 2.825	0.3455 2.852
0.3637 2.929	0.3658 2.710	0.3906 2.712	0.3385 2.827	0.3456 2.851
0.3638 2.915	0.3662 2.758	0.3922 2.789	0.3386 2.811	0.3458 2.834
0.3640 2.880	0.3666 2.753	0.3926 2.716	0.3388 2.826	0.3459 2.876
0.3641 2.925	0.3669 2.763	0.3930 2.788	0.3389 2.779	0.3461 2.890
0.3643 2.927	0.3673 2.778	0.3933 2.761	0.3391 2.814	0.3462 2.882
0.3644 2.912	0.3677 2.760	0.3937 2.758	0.3392 2.822	0.3464 2.883
0.3646 2.902	0.3681 2.750	0.3941 2.785	0.3394 2.760	0.3465 2.897
0.3647 2.924	0.3685 2.758	0.3945 2.790	0.3395 2.795	0.3467 2.885
0.3649 2.903	0.3689 2.754	0.3949 2.799	0.3397 2.787	0.3468 2.869
0.3650 2.913	0.3692 2.781	0.4059 2.844	0.3398 2.802	0.3470 2.820
0.3652 2.915	0.3696 2.769	0.4063 2.873	0.3400 2.784	0.3471 2.845
0.3653 2.902	0.3700 2.755	0.4067 2.883	0.3401 2.788	0.3473 2.886
0.3655 2.917	0.3704 2.791	0.4075 2.835	0.3403 2.811	0.3474 2.881
0.3656 2.892	0.3708 2.776	0.4079 2.832	0.3404 2.812	0.3476 2.872
0.3658 2.902	0.3712 2.761	0.4082 2.847	0.3406 2.800	0.3477 2.886
0.3659 2.910	0.3719 2.779	0.4086 2.854	0.3407 2.794	0.3479 2.864
0.3661 2.899	0.3723 2.738	0.4090 2.828	0.3409 2.844	0.3480 2.856
0.3663 2.904	0.3727 2.741	0.4094 2.869	0.3410 2.830	0.3482 2.860
0.3664 2.904	0.3731 2.775	0.4098 2.848	0.3412 2.818	0.3483 2.872

0.3485 2.873	0.3557 2.859	0.3628 2.866	0.3703 2.832	0.3778 2.848
0.3486 2.893	0.3558 2.862	0.3630 2.837	0.3705 2.852	0.3779 2.861
0.3488 2.844	0.3560 2.871	0.3631 2.876	0.3706 2.861	0.3782 2.854
0.3490 2.855	0.3561 2.845	0.3633 2.837	0.3708 2.871	0.3785 2.877
0.3491 2.877	0.3563 2.859	0.3634 2.869	0.3709 2.853	0.3787 2.834
0.3493 2.837	0.3565 2.846	0.3636 2.866	0.3711 2.869	0.3788 2.820
0.3494 2.889	0.3566 2.860	0.3637 2.852	0.3712 2.869	0.3791 2.865
0.3496 2.856	0.3568 2.852	0.3639 2.855	0.3714 2.880	0.3793 2.868
0.3498 2.875	0.3569 2.843	0.3641 2.868	0.3715 2.837	2453935 +
0.3499 2.838	0.3571 2.837	0.3642 2.875	0.3717 2.887	0.3317 2.833
0.3501 2.891	0.3572 2.872	0.3644 2.871	0.3718 2.861	0.3321 2.828
0.3502 2.872	0.3574 2.856	0.3645 2.881	0.3720 2.904	0.3325 2.845
0.3504 2.850	0.3575 2.842	0.3647 2.874	0.3721 2.861	0.3329 2.829
0.3505 2.861	0.3577 2.851	0.3648 2.867	0.3723 2.875	0.3352 2.870
0.3507 2.858	0.3578 2.852	0.3650 2.886	0.3724 2.896	0.3356 2.862
0.3508 2.855	0.3580 2.833	0.3651 2.850	0.3726 2.894	0.3362 2.858
0.3510 2.860	0.3581 2.848	0.3653 2.854	0.3727 2.901	0.3365 2.862
0.3511 2.850	0.3583 2.854	0.3655 2.856	0.3729 2.904	0.3366 2.883
0.3513 2.842	0.3584 2.855	0.3656 2.864	0.3730 2.878	0.3368 2.865
0.3514 2.849	0.3586 2.855	0.3658 2.861	0.3732 2.871	0.3369 2.859
0.3516 2.862	0.3587 2.863	0.3659 2.854	0.3733 2.889	0.3372 2.853
0.3517 2.857	0.3589 2.884	0.3661 2.819	0.3735 2.899	0.3374 2.872
0.3519 2.846	0.3590 2.879	0.3662 2.857	0.3737 2.894	0.3375 2.866
0.3520 2.838	0.3592 2.878	0.3664 2.844	0.3738 2.881	0.3377 2.876
0.3522 2.849	0.3593 2.873	0.3665 2.829	0.3740 2.887	0.3378 2.869
0.3523 2.833	0.3595 2.877	0.3667 2.828	0.3741 2.922	0.3380 2.867
0.3525 2.840	0.3596 2.852	0.3668 2.833	0.3743 2.865	0.3381 2.863
0.3526 2.848	0.3598 2.880	0.3670 2.790	0.3744 2.891	0.3383 2.856
0.3528 2.833	0.3600 2.882	0.3671 2.816	0.3746 2.907	0.3384 2.855
0.3529 2.841	0.3601 2.860	0.3674 2.813	0.3747 2.871	0.3386 2.861
0.3531 2.826	0.3603 2.861	0.3676 2.835	0.3749 2.886	0.3387 2.853
0.3533 2.819	0.3604 2.874	0.3679 2.812	0.3750 2.871	0.3389 2.859
0.3534 2.840	0.3606 2.883	0.3680 2.798	0.3752 2.856	0.3390 2.847
0.3536 2.817	0.3607 2.877	0.3682 2.808	0.3753 2.897	0.3392 2.852
0.3537 2.825	0.3609 2.861	0.3683 2.809	0.3755 2.882	0.3395 2.856
0.3539 2.833	0.3610 2.870	0.3685 2.830	0.3756 2.883	0.3395 2.849
0.3540 2.821	0.3612 2.873	0.3686 2.833	0.3759 2.837	0.3397 2.839
0.3542 2.828	0.3613 2.876	0.3688 2.824	0.3761 2.871	0.3398 2.847
0.3543 2.829	0.3615 2.889	0.3689 2.830	0.3762 2.891	0.3400 2.842
0.3545 2.836	0.3616 2.894	0.3691 2.844	0.3764 2.860	0.3401 2.846
0.3546 2.847	0.3618 2.852	0.3692 2.867	0.3765 2.900	0.3403 2.831
0.3548 2.815	0.3619 2.884	0.3694 2.856	0.3767 2.897	0.3404 2.833
0.3549 2.828	0.3621 2.871	0.3695 2.850	0.3770 2.819	0.3406 2.826
0.3551 2.860	0.3622 2.877	0.3697 2.852	0.3772 2.861	0.3407 2.824
0.3552 2.857	0.3624 2.869	0.3699 2.863	0.3773 2.880	0.3409 2.805
0.3554 2.841	0.3625 2.858	0.3700 2.859	0.3775 2.829	0.3410 2.810
0.3555 2.854	0.3627 2.864	0.3702 2.839	0.3776 2.882	0.3412 2.807

0.3413 2.785	0.3486 2.877	0.3559 2.796	0.3631 2.871	0.3703 2.802
0.3415 2.801	0.3488 2.853	0.3561 2.809	0.3632 2.882	0.3704 2.795
0.3416 2.785	0.3489 2.835	0.3562 2.799	0.3634 2.852	0.3706 2.801
0.3418 2.802	0.3491 2.852	0.3564 2.819	0.3635 2.879	0.3707 2.817
0.3419 2.792	0.3492 2.865	0.3565 2.813	0.3637 2.863	0.3709 2.807
0.3422 2.778	0.3494 2.822	0.3567 2.816	0.3638 2.862	0.3710 2.814
0.3424 2.778	0.3496 2.860	0.3568 2.816	0.3640 2.865	0.3712 2.823
0.3425 2.757	0.3497 2.860	0.3570 2.809	0.3641 2.876	0.3713 2.839
0.3427 2.809	0.3499 2.838	0.3571 2.813	0.3643 2.846	0.3715 2.830
0.3429 2.785	0.3500 2.858	0.3573 2.820	0.3644 2.868	0.3716 2.829
0.3430 2.785	0.3502 2.848	0.3574 2.802	0.3646 2.852	0.3718 2.814
0.3432 2.786	0.3503 2.822	0.3576 2.817	0.3647 2.862	0.3720 2.835
0.3433 2.799	0.3506 2.852	0.3577 2.816	0.3649 2.843	0.3721 2.831
0.3435 2.789	0.3507 2.870	0.3579 2.823	0.3650 2.862	0.3723 2.840
0.3436 2.807	0.3509 2.857	0.3580 2.817	0.3652 2.868	0.3724 2.847
0.3438 2.808	0.3511 2.836	0.3582 2.816	0.3653 2.859	0.3726 2.843
0.3439 2.813	0.3512 2.846	0.3583 2.827	0.3655 2.871	0.3727 2.831
0.3441 2.798	0.3514 2.848	0.3585 2.823	0.3656 2.869	0.3729 2.840
0.3442 2.811	0.3515 2.856	0.3587 2.819	0.3659 2.846	0.3730 2.843
0.3444 2.803	0.3517 2.839	0.3588 2.842	0.3660 2.854	0.3732 2.825
0.3445 2.829	0.3518 2.867	0.3590 2.832	0.3662 2.866	0.3733 2.852
0.3447 2.799	0.3520 2.863	0.3591 2.840	0.3663 2.860	0.3735 2.853
0.3448 2.822	0.3521 2.832	0.3593 2.824	0.3665 2.859	0.3736 2.840
0.3450 2.815	0.3523 2.852	0.3594 2.850	0.3666 2.856	0.3738 2.846
0.3451 2.824	0.3524 2.848	0.3596 2.833	0.3668 2.866	0.3739 2.860
0.3453 2.842	0.3526 2.854	0.3597 2.853	0.3669 2.840	0.3741 2.852
0.3454 2.816	0.3527 2.841	0.3599 2.822	0.3671 2.860	0.3742 2.856
0.3456 2.825	0.3529 2.855	0.3600 2.853	0.3672 2.857	0.3744 2.851
0.3458 2.828	0.3530 2.844	0.3602 2.850	0.3674 2.844	0.3745 2.867
0.3459 2.842	0.3532 2.836	0.3603 2.853	0.3675 2.852	0.3747 2.873
0.3461 2.836	0.3533 2.839	0.3605 2.854	0.3677 2.838	0.3748 2.834
0.3462 2.834	0.3535 2.842	0.3606 2.850	0.3678 2.840	0.3750 2.869
0.3464 2.847	0.3536 2.834	0.3608 2.866	0.3680 2.850	0.3751 2.865
0.3465 2.852	0.3538 2.839	0.3609 2.854	0.3681 2.818	0.3753 2.865
0.3467 2.830	0.3539 2.830	0.3611 2.858	0.3683 2.827	0.3755 2.859
0.3468 2.848	0.3541 2.835	0.3612 2.859	0.3684 2.819	0.3756 2.867
0.3470 2.856	0.3542 2.832	0.3614 2.859	0.3686 2.818	0.3758 2.869
0.3471 2.848	0.3544 2.836	0.3615 2.861	0.3688 2.803	0.3759 2.877
0.3473 2.831	0.3545 2.814	0.3617 2.870	0.3689 2.812	0.3761 2.870
0.3474 2.864	0.3547 2.837	0.3618 2.865	0.3691 2.820	0.3762 2.877
0.3476 2.861	0.3548 2.825	0.3620 2.872	0.3692 2.828	0.3764 2.867
0.3477 2.864	0.3550 2.819	0.3621 2.844	0.3694 2.809	0.3765 2.866
0.3479 2.854	0.3552 2.806	0.3623 2.860	0.3695 2.789	0.3767 2.851
0.3480 2.829	0.3553 2.815	0.3624 2.856	0.3697 2.792	0.3768 2.873
0.3482 2.861	0.3555 2.818	0.3626 2.870	0.3698 2.789	0.3770 2.870
0.3483 2.858	0.3556 2.798	0.3628 2.854	0.3700 2.793	0.3771 2.855
0.3485 2.868	0.3558 2.805	0.3629 2.871	0.3701 2.792	0.3773 2.863

0.3774 2.853	0.3853 2.815	0.3925 2.862	0.4002 2.853	0.4075 2.873
0.3776 2.878	0.3855 2.843	0.3926 2.864	0.4004 2.852	0.4076 2.860
0.3777 2.855	0.3856 2.824	0.3928 2.860	0.4005 2.852	0.4078 2.863
0.3779 2.861	0.3858 2.833	0.3929 2.867	0.4007 2.847	0.4080 2.848
0.3780 2.871	0.3859 2.823	0.3931 2.872	0.4008 2.846	0.4081 2.847
0.3782 2.854	0.3861 2.836	0.3932 2.863	0.4010 2.868	0.4083 2.863
0.3783 2.855	0.3862 2.845	0.3934 2.874	0.4011 2.842	0.4084 2.855
0.3785 2.867	0.3864 2.843	0.3935 2.853	0.4013 2.868	0.4086 2.851
0.3786 2.858	0.3865 2.841	0.3937 2.857	0.4014 2.870	0.4087 2.863
0.3788 2.862	0.3867 2.849	0.3938 2.868	0.4016 2.868	0.4089 2.871
0.3790 2.839	0.3868 2.854	0.3940 2.856	0.4017 2.875	0.4090 2.859
0.3791 2.858	0.3870 2.821	0.3941 2.893	0.4019 2.864	0.4092 2.847
0.3793 2.856	0.3871 2.830	0.3943 2.857	0.4020 2.858	0.4093 2.845
0.3794 2.844	0.3873 2.848	0.3944 2.889	0.4022 2.867	0.4095 2.841
0.3796 2.856	0.3874 2.845	0.3946 2.849	0.4023 2.870	0.4096 2.844
0.3797 2.866	0.3876 2.848	0.3947 2.855	0.4025 2.866	0.4098 2.824
0.3799 2.881	0.3877 2.849	0.3949 2.852	0.4026 2.875	0.4099 2.826
0.3800 2.850	0.3879 2.861	0.3950 2.852	0.4028 2.869	0.4101 2.817
0.3802 2.875	0.3880 2.851	0.3952 2.849	0.4031 2.871	0.4102 2.833
0.3803 2.856	0.3882 2.858	0.3953 2.853	0.4032 2.859	0.4104 2.807
0.3805 2.856	0.3883 2.849	0.3955 2.854	0.4034 2.880	0.4105 2.807
0.3806 2.848	0.3885 2.888	0.3957 2.851	0.4035 2.872	0.4107 2.809
0.3808 2.857	0.3886 2.878	0.3958 2.838	0.4037 2.879	0.4108 2.799
0.3809 2.843	0.3888 2.879	0.3960 2.838	0.4038 2.872	0.4110 2.815
0.3818 2.850	0.3890 2.871	0.3961 2.851	0.4040 2.866	0.4111 2.819
0.3820 2.843	0.3891 2.878	0.3963 2.827	0.4042 2.872	0.4113 2.803
0.3821 2.838	0.3893 2.855	0.3964 2.812	0.4043 2.869	0.4115 2.837
0.3823 2.830	0.3894 2.865	0.3966 2.805	0.4045 2.871	0.4116 2.810
0.3824 2.828	0.3896 2.894	0.3967 2.798	0.4046 2.865	0.4118 2.832
0.3826 2.836	0.3897 2.879	0.3969 2.809	0.4048 2.867	0.4119 2.803
0.3827 2.833	0.3899 2.856	0.3976 2.820	0.4049 2.854	0.4121 2.831
0.3829 2.818	0.3900 2.865	0.3978 2.816	0.4051 2.861	0.4122 2.844
0.3830 2.837	0.3902 2.868	0.3979 2.803	0.4052 2.860	0.4124 2.843
0.3832 2.814	0.3903 2.870	0.3981 2.837	0.4054 2.854	0.4125 2.837
0.3833 2.810	0.3905 2.878	0.3982 2.827	0.4055 2.857	0.4127 2.861
0.3835 2.815	0.3906 2.880	0.3984 2.829	0.4057 2.856	2453936 +
0.3836 2.802	0.3908 2.881	0.3985 2.831	0.4058 2.860	0.3421 2.845
0.3838 2.821	0.3909 2.896	0.3987 2.820	0.4060 2.866	0.3422 2.843
0.3839 2.816	0.3911 2.858	0.3988 2.833	0.4061 2.875	0.3424 2.839
0.3841 2.812	0.3912 2.891	0.3990 2.841	0.4063 2.871	0.3425 2.858
0.3842 2.826	0.3914 2.889	0.3991 2.858	0.4064 2.859	0.3427 2.838
0.3844 2.828	0.3915 2.861	0.3993 2.835	0.4066 2.840	0.3428 2.830
0.3845 2.821	0.3917 2.863	0.3994 2.831	0.4067 2.833	0.3430 2.838
0.3847 2.832	0.3919 2.869	0.3996 2.856	0.4069 2.878	0.3431 2.837
0.3848 2.825	0.3920 2.860	0.3997 2.852	0.4070 2.880	0.3433 2.821
0.3850 2.824	0.3922 2.866	0.3999 2.858	0.4072 2.854	0.3434 2.833
0.3852 2.845	0.3923 2.879	0.4000 2.857	0.4073 2.875	0.3436 2.797

0.3437 2.814	0.3509 2.869	0.3582 2.797	0.3654 2.890	0.3725 2.824
0.3439 2.803	0.3510 2.874	0.3584 2.793	0.3655 2.884	0.3727 2.834
0.3441 2.793	0.3512 2.854	0.3585 2.808	0.3657 2.880	0.3728 2.828
0.3442 2.809	0.3513 2.854	0.3587 2.799	0.3658 2.883	0.3730 2.851
0.3444 2.780	0.3515 2.854	0.3588 2.808	0.3660 2.876	0.3731 2.827
0.3445 2.794	0.3517 2.865	0.3590 2.810	0.3661 2.874	0.3733 2.840
0.3447 2.781	0.3518 2.868	0.3591 2.828	0.3663 2.879	0.3734 2.835
0.3448 2.774	0.3520 2.858	0.3593 2.812	0.3664 2.881	0.3736 2.851
0.3450 2.790	0.3521 2.843	0.3594 2.807	0.3666 2.876	0.3737 2.848
0.3451 2.801	0.3523 2.864	0.3596 2.820	0.3667 2.865	0.3739 2.833
0.3453 2.821	0.3524 2.857	0.3597 2.811	0.3669 2.888	0.3740 2.855
0.3454 2.812	0.3526 2.845	0.3599 2.811	0.3671 2.882	0.3742 2.849
0.3456 2.813	0.3527 2.871	0.3600 2.829	0.3672 2.868	0.3744 2.856
0.3457 2.829	0.3529 2.872	0.3602 2.826	0.3674 2.873	0.3745 2.866
0.3459 2.828	0.3530 2.857	0.3603 2.813	0.3675 2.878	0.3747 2.868
0.3460 2.824	0.3532 2.871	0.3605 2.831	0.3677 2.856	0.3748 2.851
0.3462 2.828	0.3533 2.861	0.3607 2.831	0.3678 2.852	0.3750 2.857
0.3463 2.826	0.3535 2.856	0.3608 2.838	0.3680 2.864	0.3751 2.857
0.3465 2.833	0.3536 2.859	0.3610 2.847	0.3681 2.865	0.3753 2.843
0.3466 2.841	0.3538 2.852	0.3611 2.834	0.3683 2.884	0.3754 2.886
0.3468 2.830	0.3539 2.864	0.3613 2.858	0.3684 2.873	0.3756 2.864
0.3469 2.827	0.3541 2.864	0.3614 2.848	0.3686 2.861	0.3757 2.869
0.3471 2.843	0.3542 2.860	0.3616 2.849	0.3687 2.889	0.3759 2.862
0.3472 2.833	0.3544 2.848	0.3617 2.841	0.3689 2.867	0.3760 2.865
0.3474 2.828	0.3545 2.856	0.3619 2.829	0.3690 2.865	0.3762 2.878
0.3475 2.843	0.3547 2.861	0.3620 2.838	0.3692 2.854	0.3763 2.874
0.3477 2.844	0.3548 2.868	0.3622 2.855	0.3693 2.854	0.3765 2.866
0.3479 2.854	0.3550 2.843	0.3623 2.855	0.3695 2.872	0.3766 2.871
0.3480 2.873	0.3551 2.853	0.3625 2.857	0.3696 2.841	0.3768 2.867
0.3482 2.856	0.3553 2.858	0.3626 2.871	0.3698 2.849	0.3769 2.888
0.3483 2.877	0.3555 2.860	0.3628 2.863	0.3699 2.854	0.3771 2.877
0.3485 2.847	0.3556 2.845	0.3629 2.853	0.3701 2.843	0.3772 2.907
0.3486 2.861	0.3558 2.846	0.3631 2.876	0.3702 2.844	0.3774 2.876
0.3488 2.852	0.3559 2.833	0.3632 2.880	0.3704 2.827	0.3775 2.888
0.3489 2.857	0.3561 2.849	0.3634 2.861	0.3705 2.835	0.3777 2.894
0.3491 2.873	0.3562 2.832	0.3636 2.871	0.3707 2.839	0.3779 2.885
0.3492 2.868	0.3564 2.843	0.3637 2.877	0.3709 2.815	0.3780 2.880
0.3494 2.851	0.3565 2.842	0.3639 2.869	0.3710 2.823	0.3782 2.901
0.3495 2.851	0.3567 2.845	0.3640 2.871	0.3712 2.832	0.3783 2.885
0.3497 2.858	0.3568 2.830	0.3642 2.872	0.3713 2.789	0.3785 2.891
0.3498 2.846	0.3570 2.826	0.3643 2.882	0.3715 2.835	0.3786 2.888
0.3500 2.837	0.3571 2.727	0.3645 2.869	0.3716 2.796	0.3788 2.897
0.3501 2.873	0.3575 2.839	0.3646 2.881	0.3718 2.810	0.3789 2.855
0.3503 2.867	0.3576 2.836	0.3648 2.884	0.3719 2.805	0.3791 2.883
0.3504 2.875	0.3578 2.829	0.3649 2.875	0.3721 2.819	0.3792 2.889
0.3506 2.867	0.3579 2.820	0.3651 2.876	0.3722 2.832	0.3794 2.874
0.3507 2.854	0.3581 2.803	0.3652 2.872	0.3724 2.806	0.3795 2.887

0.3797 2.888	0.3859 2.819	0.3929 2.906	0.3991 2.836	0.4053 2.907
0.3798 2.893	0.3861 2.821	0.3930 2.897	0.3992 2.837	0.4055 2.870
0.3800 2.892	0.3862 2.825	0.3932 2.897	0.3994 2.834	0.4057 2.919
0.3801 2.888	0.3864 2.824	0.3933 2.907	0.3995 2.835	0.4058 2.908
0.3803 2.885	0.3865 2.837	0.3935 2.906	0.3997 2.849	0.4060 2.892
0.3804 2.898	0.3867 2.836	0.3936 2.896	0.3998 2.827	0.4061 2.903
0.3806 2.872	0.3868 2.833	0.3938 2.899	0.4000 2.850	0.4063 2.869
0.3807 2.872	0.3870 2.831	0.3939 2.910	0.4002 2.851	0.4064 2.888
0.3809 2.882	0.3871 2.832	0.3941 2.901	0.4003 2.828	0.4066 2.902
0.3810 2.894	0.3873 2.850	0.3942 2.906	0.4005 2.860	0.4067 2.900
0.3812 2.886	0.3874 2.863	0.3944 2.899	0.4006 2.853	0.4069 2.891
0.3813 2.886	0.3876 2.857	0.3945 2.890	0.4008 2.856	0.4070 2.899
0.3815 2.869	0.3877 2.864	0.3947 2.905	0.4009 2.858	0.4072 2.881
0.3817 2.880	0.3886 2.865	0.3948 2.895	0.4011 2.852	0.4073 2.901
0.3818 2.875	0.3887 2.884	0.3950 2.889	0.4012 2.879	0.4075 2.886
0.3820 2.891	0.3889 2.897	0.3951 2.882	0.4014 2.864	0.4076 2.895
0.3821 2.878	0.3890 2.873	0.3953 2.906	0.4015 2.862	0.4078 2.898
0.3823 2.885	0.3892 2.891	0.3954 2.888	0.4017 2.866	0.4079 2.895
0.3824 2.879	0.3894 2.904	0.3956 2.890	0.4018 2.868	0.4081 2.888
0.3826 2.872	0.3895 2.882	0.3957 2.879	0.4020 2.873	0.4082 2.895
0.3827 2.881	0.3897 2.880	0.3959 2.904	0.4021 2.870	0.4084 2.902
0.3829 2.888	0.3898 2.893	0.3960 2.890	0.4023 2.873	0.4085 2.885
0.3830 2.875	0.3900 2.882	0.3962 2.885	0.4024 2.873	0.4087 2.883
0.3832 2.885	0.3901 2.889	0.3963 2.888	0.4026 2.879	0.4089 2.910
0.3833 2.877	0.3903 2.876	0.3965 2.884	0.4028 2.895	0.4090 2.897
0.3835 2.871	0.3904 2.888	0.3967 2.889	0.4029 2.886	0.4092 2.890
0.3836 2.853	0.3906 2.892	0.3968 2.881	0.4031 2.872	0.4093 2.897
0.3838 2.882	0.3907 2.892	0.3970 2.880	0.4032 2.918	0.4095 2.879
0.3839 2.864	0.3909 2.901	0.3971 2.870	0.4034 2.893	0.4096 2.880
0.3841 2.853	0.3910 2.909	0.3973 2.890	0.4035 2.889	0.4098 2.891
0.3842 2.858	0.3912 2.902	0.3974 2.857	0.4037 2.882	0.4099 2.889
0.3844 2.837	0.3913 2.894	0.3976 2.847	0.4038 2.878	0.4101 2.875
0.3845 2.846	0.3915 2.900	0.3977 2.861	0.4040 2.877	0.4102 2.890
0.3847 2.854	0.3916 2.900	0.3979 2.872	0.4041 2.889	0.4104 2.883
0.3848 2.858	0.3918 2.922	0.3980 2.853	0.4043 2.908	0.4105 2.902
0.3850 2.861	0.3919 2.899	0.3982 2.855	0.4044 2.916	0.4107 2.875
0.3852 2.841	0.3921 2.895	0.3983 2.874	0.4046 2.888	0.4108 2.897
0.3853 2.821	0.3922 2.916	0.3985 2.852	0.4047 2.897	0.4110 2.875
0.3855 2.825	0.3924 2.899	0.3986 2.830	0.4049 2.899	0.4111 2.871
0.3856 2.812	0.3925 2.901	0.3988 2.847	0.4050 2.894	0.4113 2.871
0.3858 2.828	0.3927 2.897	0.3989 2.835	0.4052 2.910	

For showing the details in a proper way the light curves are shown on 4 pages, five nights per page, for GD 154 – c1 in Figure 89, 90, 91 and 92. Since the relative light curves of the two comparison stars are more simple, they are organized only on two pages in Figures 93 and 94.

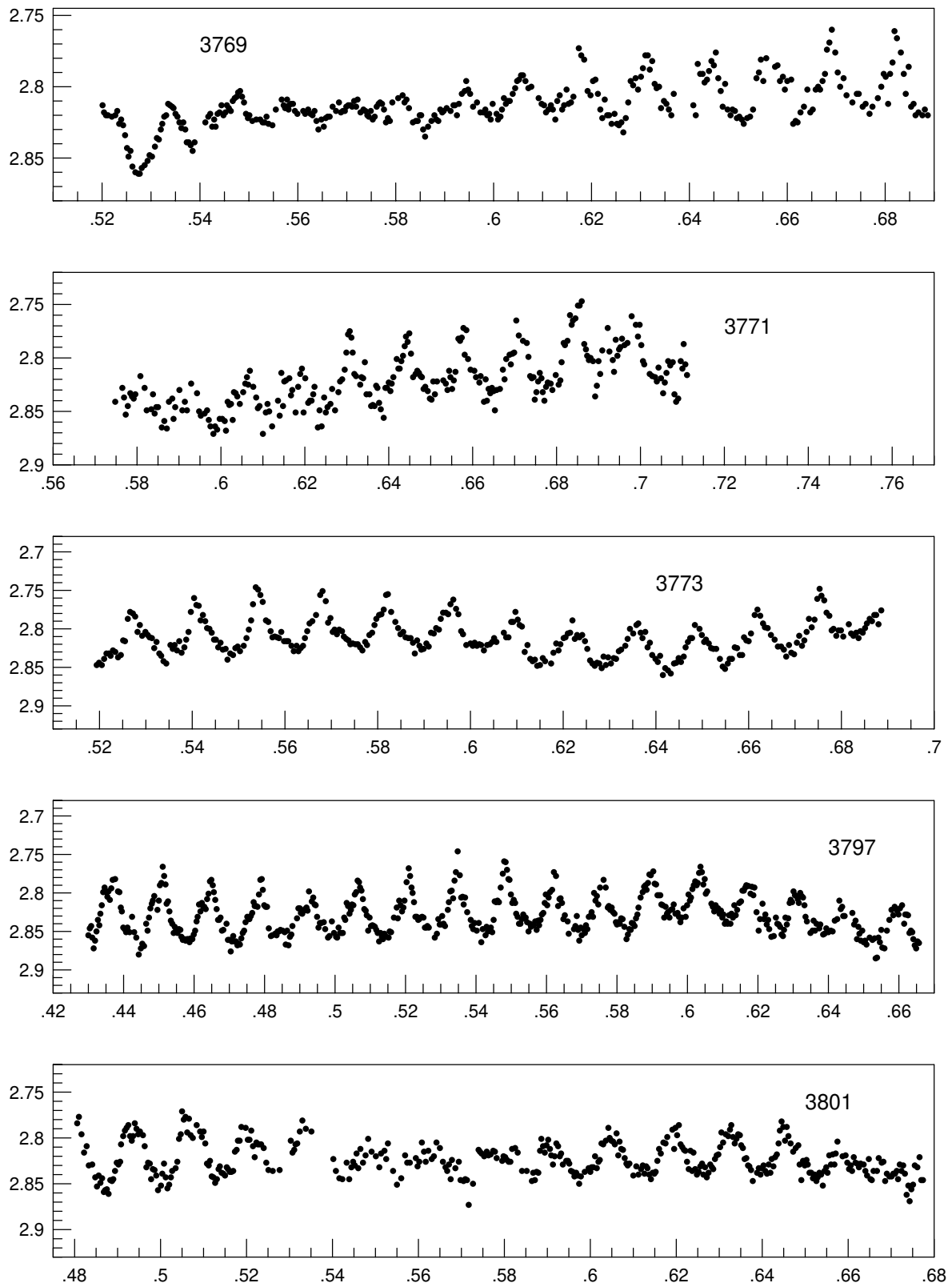


Figure 89: Light curves of GD 154 - c1 in white light.

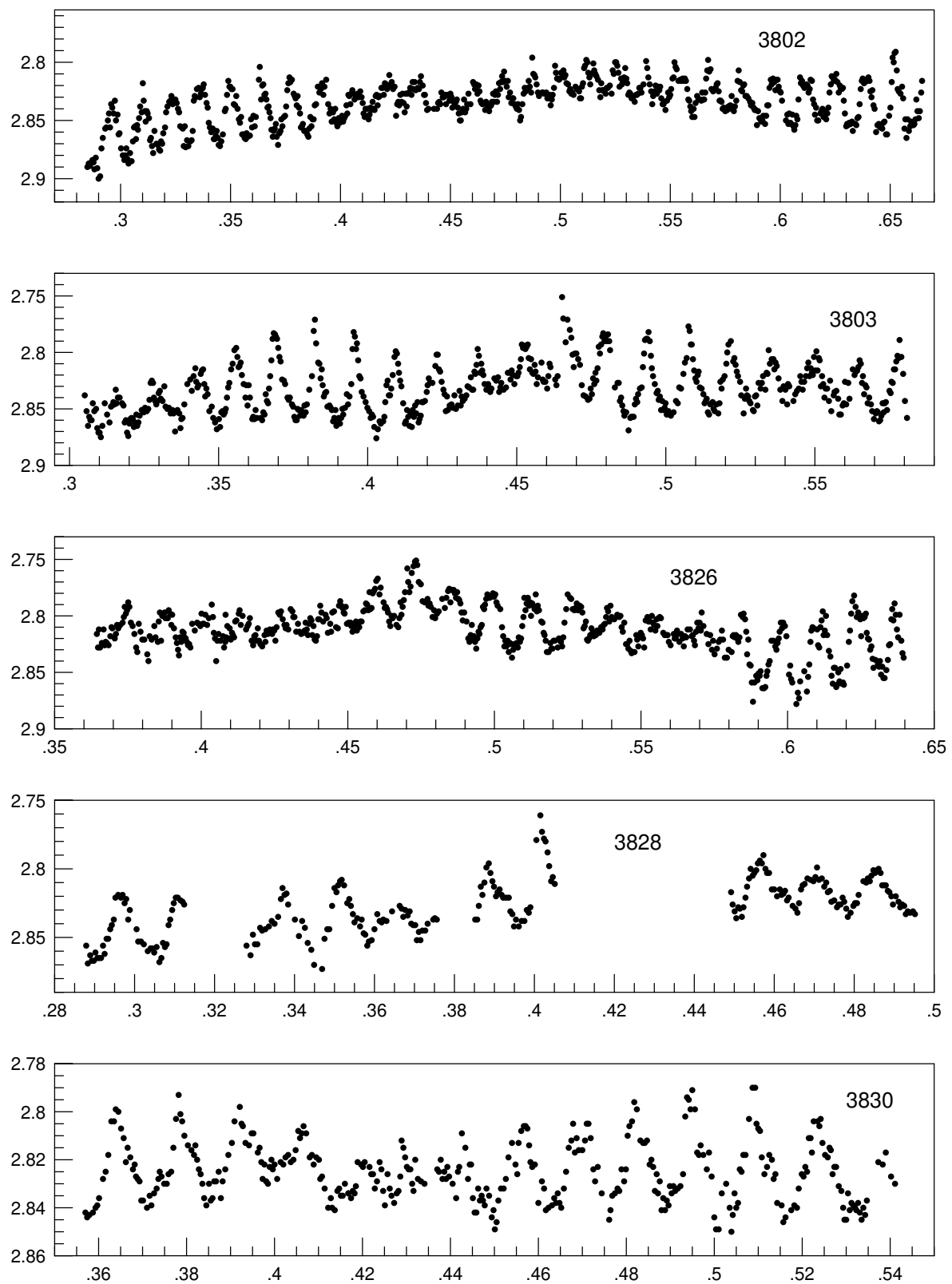


Figure 90: Light curves of GD 154 - c1 in white light.

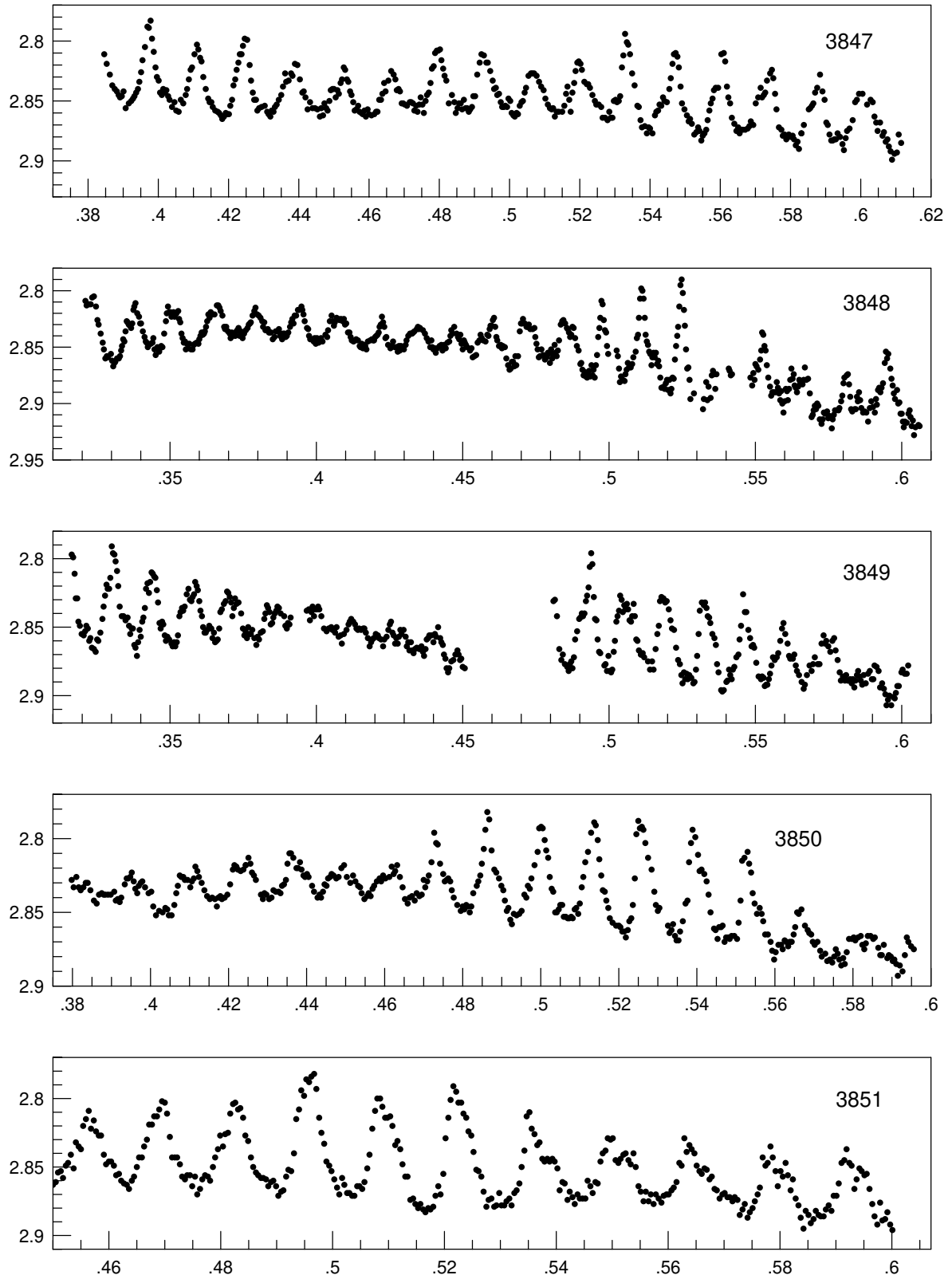


Figure 91: Light curves of GD 154 – c1 in white light.

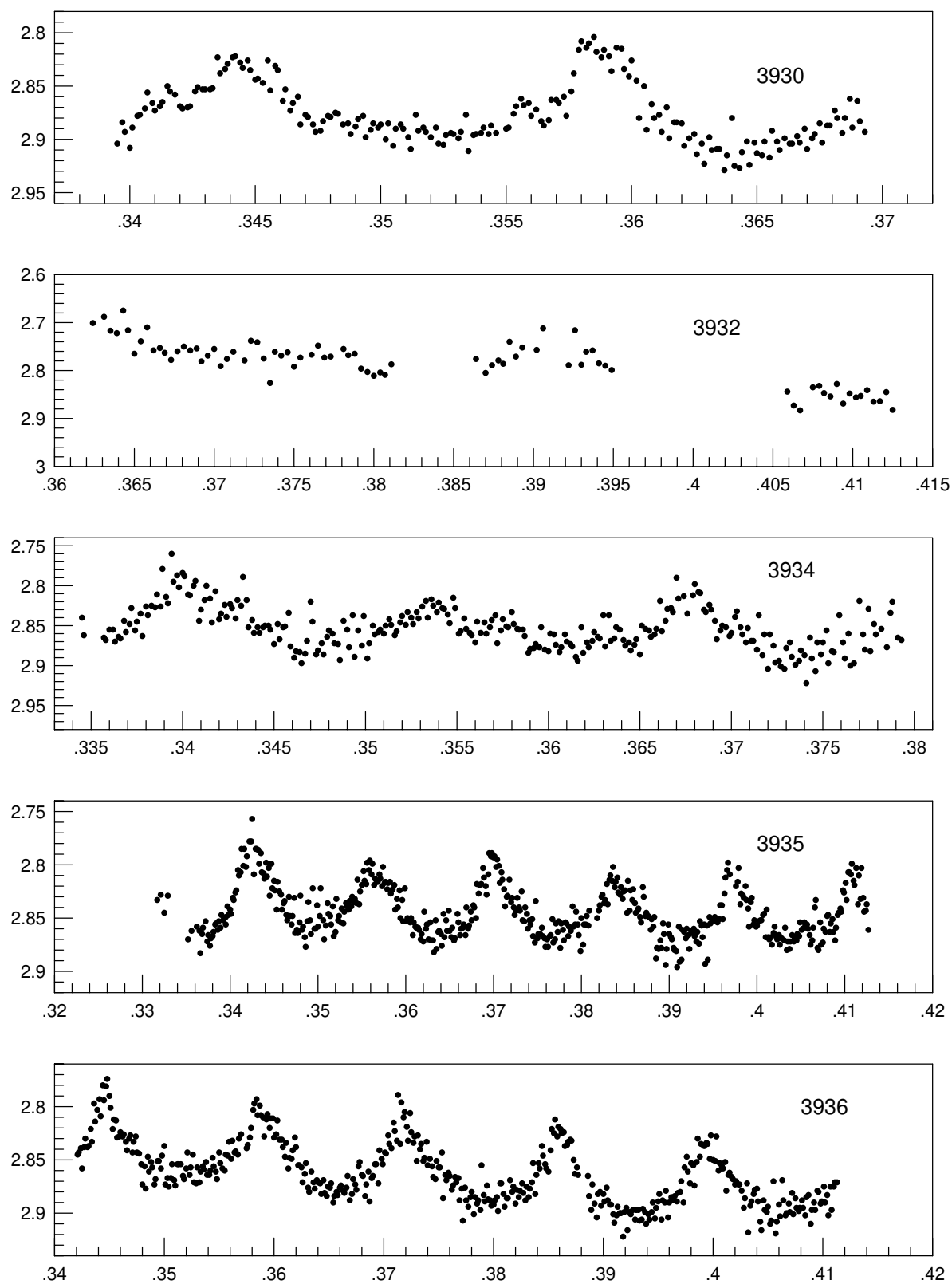
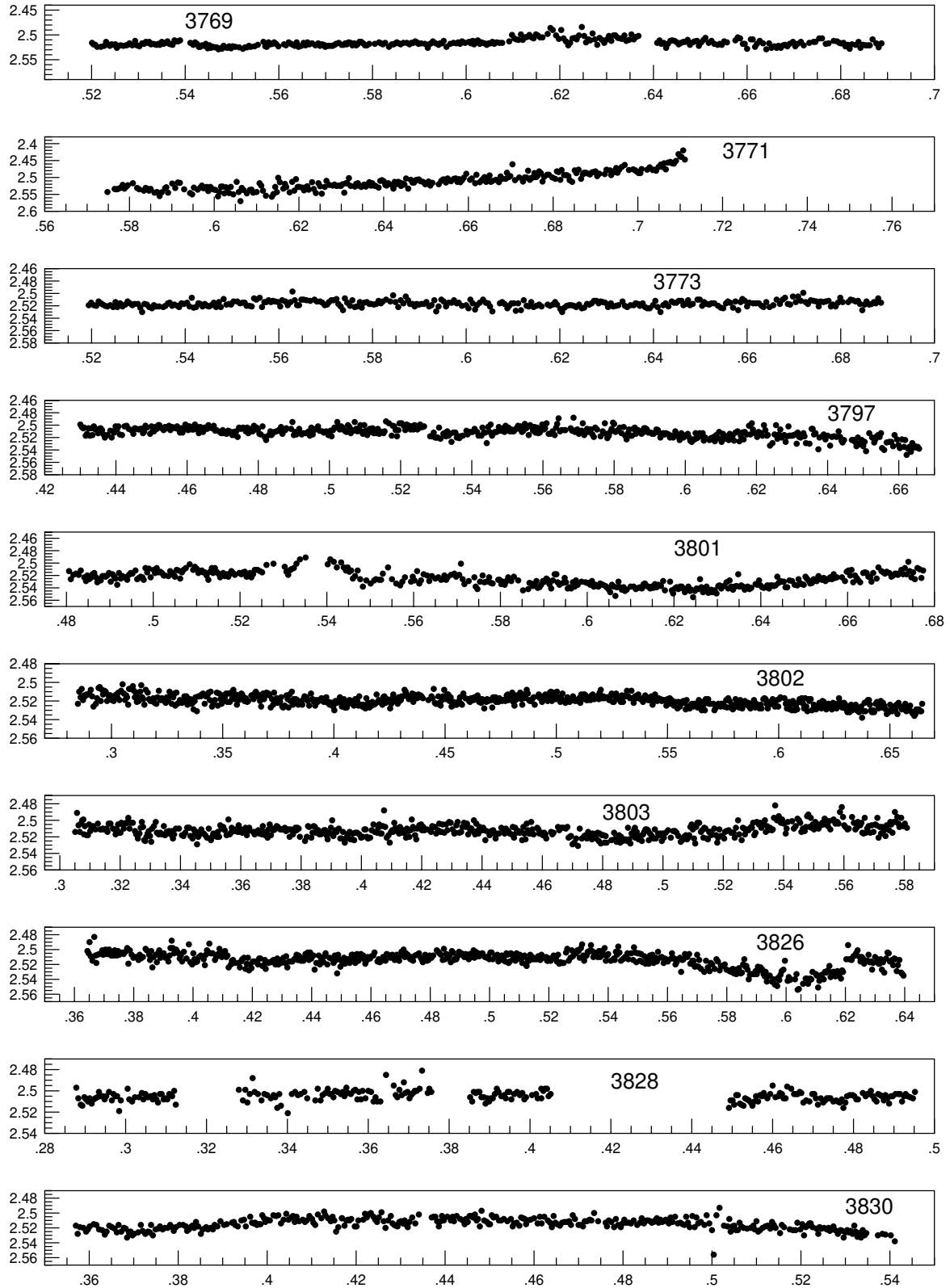


Figure 92: Light curves of GD 154 - c1 in white light.

Figure 93: Light curves of $c2 - c1$ in white light.

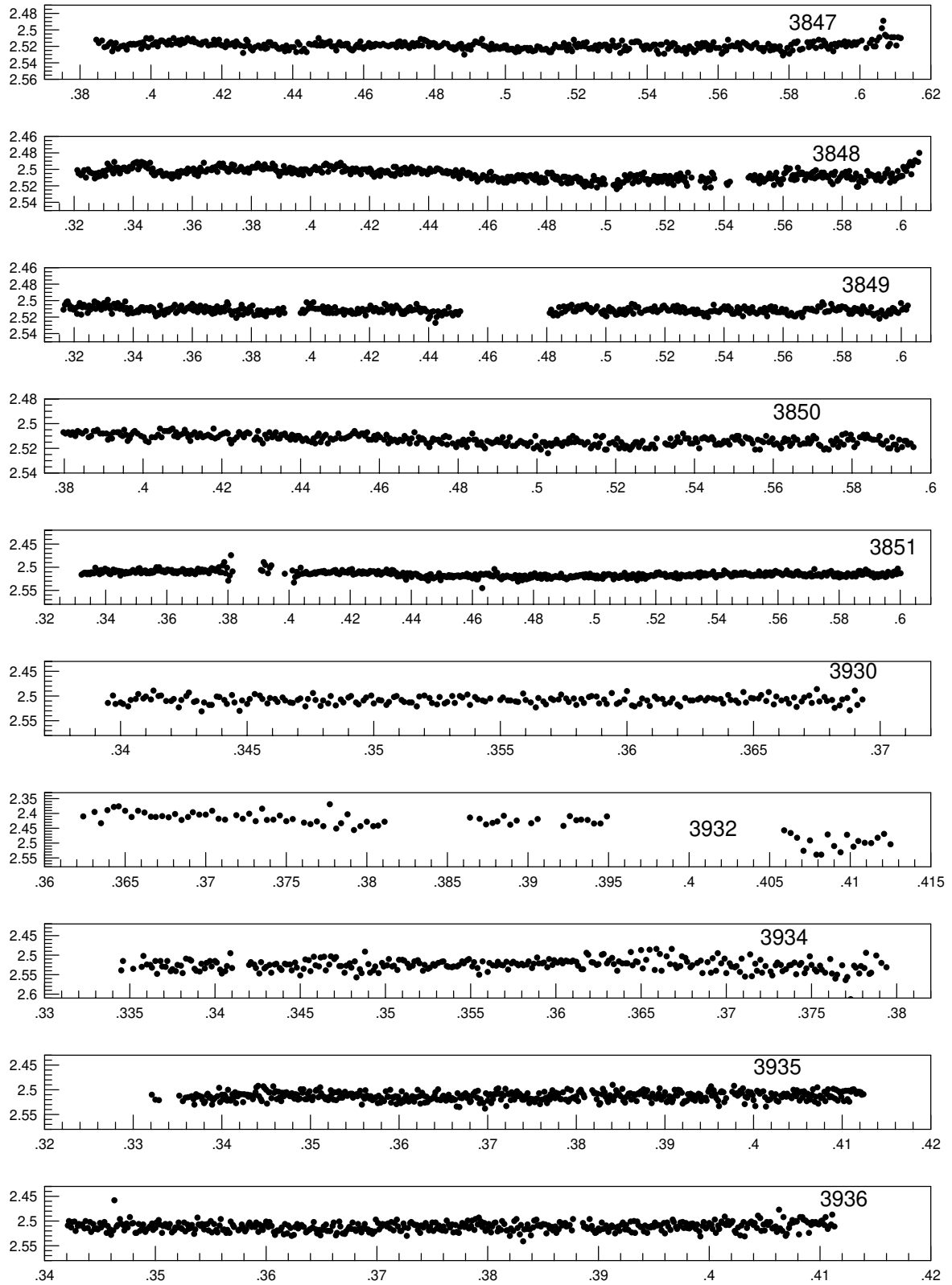
Figure 94: Light curves of $c_2 - c_1$ in white light.

Table 132. The differential data for $c2 - c1$ in white light

c2 - c1	0.5385 2.513	0.5611 2.519	0.5818 2.517	0.6033 2.515
2453769 +	0.5389 2.511	0.5615 2.521	0.5822 2.519	0.6039 2.517
0.5201 2.516	0.5411 2.516	0.5621 2.515	0.5827 2.516	0.6044 2.52
0.5204 2.519	0.5417 2.520	0.5626 2.518	0.5835 2.524	0.6048 2.517
0.5208 2.520	0.5421 2.515	0.5630 2.520	0.5841 2.519	0.6052 2.517
0.5212 2.524	0.5425 2.518	0.5634 2.522	0.5845 2.519	0.6056 2.514
0.5220 2.524	0.5429 2.524	0.5638 2.515	0.5849 2.517	0.6060 2.518
0.5227 2.522	0.5432 2.524	0.5642 2.524	0.5852 2.515	0.6065 2.515
0.5231 2.514	0.5436 2.521	0.5648 2.522	0.5856 2.517	0.6071 2.516
0.5235 2.519	0.5440 2.522	0.5653 2.516	0.5860 2.519	0.6077 2.516
0.5239 2.522	0.5444 2.518	0.5657 2.521	0.5866 2.516	0.6092 2.513
0.5243 2.519	0.5448 2.527	0.5661 2.515	0.5873 2.516	0.6098 2.500
0.5247 2.520	0.5452 2.521	0.5665 2.519	0.5879 2.519	0.6103 2.507
0.5251 2.519	0.5455 2.526	0.5671 2.517	0.5883 2.516	0.6107 2.509
0.5254 2.526	0.5459 2.524	0.5678 2.521	0.5887 2.516	0.6112 2.510
0.5258 2.522	0.5463 2.525	0.5684 2.517	0.5891 2.513	0.6117 2.499
0.5262 2.521	0.5467 2.525	0.5688 2.522	0.5895 2.515	0.6121 2.510
0.5268 2.522	0.5471 2.529	0.5692 2.519	0.5898 2.518	0.6126 2.505
0.5274 2.521	0.5475 2.527	0.5696 2.520	0.5904 2.517	0.6130 2.504
0.5277 2.520	0.5478 2.528	0.5699 2.524	0.5912 2.518	0.6135 2.500
0.5281 2.517	0.5482 2.522	0.5703 2.522	0.5918 2.526	0.6140 2.505
0.5287 2.521	0.5486 2.525	0.5707 2.522	0.5921 2.519	0.6144 2.507
0.5293 2.512	0.5490 2.526	0.5711 2.522	0.5925 2.517	0.6149 2.499
0.5297 2.521	0.5494 2.523	0.5715 2.522	0.5929 2.513	0.6153 2.501
0.5302 2.523	0.5498 2.527	0.5719 2.520	0.5935 2.517	0.6158 2.505
0.5308 2.517	0.5501 2.523	0.5722 2.518	0.5941 2.520	0.6163 2.505
0.5312 2.518	0.5507 2.524	0.5728 2.516	0.5944 2.517	0.6174 2.498
0.5316 2.514	0.5515 2.525	0.5734 2.520	0.5948 2.517	0.6180 2.486
0.5320 2.516	0.5523 2.528	0.5738 2.520	0.5952 2.512	0.6185 2.490
0.5323 2.514	0.5528 2.525	0.5742 2.517	0.5958 2.524	0.6192 2.501
0.5327 2.519	0.5532 2.525	0.5745 2.519	0.5966 2.518	0.6198 2.508
0.5331 2.518	0.5536 2.522	0.5749 2.515	0.5973 2.516	0.6203 2.490
0.5335 2.519	0.5540 2.524	0.5753 2.516	0.5979 2.517	0.6208 2.507
0.5339 2.520	0.5548 2.523	0.5757 2.521	0.5983 2.515	0.6213 2.513
0.5343 2.518	0.5555 2.520	0.5761 2.517	0.5987 2.518	0.6218 2.521
0.5346 2.520	0.5581 2.518	0.5765 2.521	0.5991 2.513	0.6222 2.516
0.5350 2.514	0.5567 2.514	0.5768 2.519	0.5994 2.515	0.6227 2.507
0.5354 2.518	0.5571 2.523	0.5772 2.514	0.5998 2.516	0.6232 2.506
0.5358 2.516	0.5574 2.524	0.5776 2.514	0.6006 2.514	0.6236 2.509
0.5362 2.513	0.5578 2.515	0.5780 2.517	0.6010 2.517	0.6241 2.501
0.5366 2.518	0.5582 2.519	0.5784 2.521	0.6014 2.512	0.6247 2.484
0.5370 2.519	0.5586 2.518	0.5788 2.521	0.6017 2.519	0.6252 2.502
0.5373 2.520	0.5590 2.515	0.5793 2.518	0.6021 2.513	0.6256 2.515
0.5377 2.511	0.5594 2.518	0.5805 2.518	0.6025 2.511	0.6261 2.509
0.5381 2.513	0.5599 2.523	0.5814 2.515	0.6029 2.518	0.6265 2.511

0.6270 2.497	0.6537 2.520	0.6819 2.528	0.5967 2.530	0.6208 2.530
0.6275 2.509	0.6542 2.518	0.6824 2.519	0.5971 2.524	0.6212 2.538
0.6280 2.520	0.6546 2.520	0.6832 2.520	0.5975 2.532	0.6216 2.529
0.6285 2.506	0.6551 2.513	0.6838 2.514	0.5982 2.528	0.6220 2.526
0.6290 2.510	0.6557 2.515	0.6842 2.526	0.5986 2.540	0.6223 2.536
0.6295 2.516	0.6575 2.511	0.6848 2.520	0.5991 2.528	0.6231 2.514
0.6301 2.509	0.6580 2.505	0.6853 2.521	0.5997 2.535	0.6235 2.534
0.6305 2.502	0.6585 2.507	0.6858 2.521	0.6003 2.537	0.6240 2.546
0.6310 2.512	0.6591 2.518	0.6862 2.521	0.6009 2.556	0.6246 2.517
0.6315 2.501	0.6595 2.518	0.6868 2.509	0.6012 2.543	0.6250 2.526
0.6319 2.501	0.6600 2.528	0.6876 2.517	0.6016 2.527	0.6254 2.548
0.6324 2.506	0.6608 2.509	0.6881 2.525	0.6020 2.527	0.6261 2.528
0.6329 2.507	0.6612 2.509	0.6887 2.517	0.6024 2.547	0.6265 2.510
0.6333 2.508	0.6617 2.524	2453771 +	0.6028 2.529	0.6272 2.522
0.6338 2.501	0.6621 2.518	0.5748 2.543	0.6031 2.532	0.6280 2.524
0.6342 2.512	0.6627 2.512	0.5765 2.534	0.6035 2.546	0.6284 2.521
0.6348 2.510	0.6634 2.517	0.5769 2.535	0.6039 2.528	0.6289 2.525
0.6353 2.499	0.6641 2.529	0.5773 2.534	0.6045 2.550	0.6295 2.524
0.6358 2.509	0.6647 2.517	0.5778 2.531	0.6053 2.513	0.6299 2.525
0.6363 2.504	0.6652 2.526	0.5784 2.522	0.6058 2.543	0.6303 2.520
0.6368 2.502	0.6658 2.523	0.5788 2.533	0.6062 2.570	0.6307 2.545
0.6408 2.516	0.6663 2.526	0.5792 2.528	0.6065 2.531	0.6311 2.517
0.6413 2.511	0.6667 2.522	0.5796 2.523	0.6069 2.537	0.6314 2.517
0.6417 2.518	0.6672 2.526	0.5808 2.517	0.6077 2.547	0.6318 2.502
0.6422 2.516	0.6677 2.521	0.5818 2.531	0.6084 2.537	0.6322 2.525
0.6427 2.526	0.6681 2.520	0.5823 2.535	0.6088 2.536	0.6332 2.527
0.6431 2.518	0.6686 2.523	0.5834 2.539	0.6092 2.545	0.6335 2.519
0.6436 2.512	0.6691 2.518	0.5838 2.531	0.6100 2.543	0.6339 2.517
0.6440 2.511	0.6698 2.514	0.5842 2.533	0.6107 2.517	0.6343 2.525
0.6445 2.512	0.6703 2.523	0.5846 2.539	0.6111 2.524	0.6347 2.528
0.6450 2.515	0.6708 2.518	0.5850 2.534	0.6115 2.539	0.6354 2.521
0.6454 2.519	0.6715 2.514	0.5859 2.545	0.6122 2.554	0.6358 2.527
0.6459 2.516	0.6721 2.521	0.5865 2.543	0.6136 2.557	0.6362 2.522
0.6464 2.514	0.6733 2.516	0.5871 2.555	0.6140 2.549	0.6366 2.514
0.6468 2.514	0.6742 2.514	0.5876 2.544	0.6144 2.528	0.6370 2.524
0.6473 2.510	0.6746 2.514	0.5884 2.532	0.6148 2.543	0.6373 2.517
0.6478 2.520	0.6754 2.507	0.5887 2.529	0.6151 2.501	0.6377 2.524
0.6484 2.515	0.6760 2.507	0.5891 2.545	0.6155 2.514	0.6381 2.525
0.6488 2.513	0.6768 2.518	0.5901 2.518	0.6163 2.533	0.6388 2.530
0.6493 2.512	0.6774 2.517	0.5908 2.531	0.6167 2.519	0.6392 2.510
0.6497 2.522	0.6785 2.512	0.5914 2.515	0.6170 2.528	0.6396 2.508
0.6502 2.515	0.6792 2.513	0.5919 2.516	0.6178 2.544	0.6400 2.511
0.6507 2.510	0.6797 2.516	0.5929 2.535	0.6184 2.513	0.6404 2.522
0.6511 2.506	0.6801 2.517	0.5943 2.546	0.6189 2.539	0.6407 2.524
0.6518 2.516	0.6806 2.516	0.5948 2.550	0.6193 2.505	0.6411 2.517
0.6524 2.512	0.6810 2.523	0.5952 2.530	0.6197 2.528	0.6419 2.522
0.6530 2.518	0.6815 2.520	0.5961 2.536	0.6201 2.528	0.6423 2.533

0.6426 2.513	0.6646 2.505	0.6873 2.486	2453773 +	0.5432 2.517
0.6430 2.520	0.6650 2.494	0.6877 2.486	0.5194 2.519	0.5437 2.521
0.6434 2.513	0.6653 2.513	0.6881 2.488	0.5199 2.515	0.5442 2.517
0.6438 2.515	0.6657 2.510	0.6887 2.491	0.5205 2.519	0.5447 2.520
0.6441 2.525	0.6665 2.507	0.6892 2.485	0.5210 2.520	0.5451 2.521
0.6445 2.518	0.6672 2.514	0.6896 2.484	0.5215 2.513	0.5456 2.519
0.6449 2.521	0.6676 2.497	0.6900 2.482	0.5220 2.516	0.5461 2.515
0.6453 2.503	0.6680 2.504	0.6904 2.496	0.5224 2.518	0.5466 2.522
0.6458 2.533	0.6688 2.504	0.6909 2.489	0.5229 2.520	0.5472 2.514
0.6464 2.507	0.6691 2.486	0.6922 2.490	0.5234 2.521	0.5476 2.522
0.6468 2.515	0.6695 2.499	0.6926 2.477	0.5240 2.519	0.5482 2.509
0.6472 2.515	0.6699 2.496	0.6934 2.479	0.5246 2.522	0.5488 2.518
0.6476 2.508	0.6704 2.461	0.6937 2.493	0.5251 2.514	0.5494 2.517
0.6479 2.507	0.6710 2.508	0.6941 2.482	0.5255 2.522	0.5498 2.518
0.6483 2.506	0.6720 2.500	0.6945 2.484	0.5261 2.516	0.5503 2.513
0.6487 2.511	0.6729 2.512	0.6949 2.472	0.5266 2.521	0.5511 2.513
0.6493 2.513	0.6733 2.500	0.6952 2.486	0.5272 2.518	0.5517 2.516
0.6498 2.520	0.6737 2.500	0.6956 2.477	0.5277 2.513	0.5522 2.515
0.6502 2.518	0.6741 2.480	0.6962 2.469	0.5282 2.516	0.5527 2.515
0.6506 2.512	0.6745 2.507	0.6969 2.463	0.5287 2.519	0.5531 2.520
0.6510 2.524	0.6748 2.502	0.6979 2.478	0.5292 2.517	0.5537 2.520
0.6515 2.516	0.6752 2.500	0.6989 2.476	0.5299 2.517	0.5542 2.521
0.6530 2.520	0.6756 2.487	0.6994 2.479	0.5304 2.523	0.5547 2.508
0.6536 2.510	0.6760 2.499	0.6998 2.483	0.5308 2.530	0.5552 2.510
0.6540 2.506	0.6764 2.494	0.7002 2.487	0.5313 2.517	0.5559 2.507
0.6544 2.506	0.6767 2.482	0.7006 2.487	0.5318 2.518	0.5564 2.522
0.6547 2.515	0.6771 2.487	0.7009 2.475	0.5323 2.522	0.5569 2.514
0.6551 2.503	0.6775 2.512	0.7022 2.477	0.5329 2.524	0.5573 2.514
0.6555 2.508	0.6779 2.498	0.7028 2.470	0.5333 2.519	0.5578 2.511
0.6559 2.511	0.6786 2.492	0.7035 2.478	0.5338 2.521	0.5583 2.514
0.6566 2.504	0.6790 2.492	0.7039 2.477	0.5344 2.521	0.5587 2.512
0.6570 2.503	0.6798 2.500	0.7043 2.480	0.5353 2.522	0.5592 2.513
0.6574 2.513	0.6805 2.504	0.7049 2.469	0.5358 2.520	0.5598 2.514
0.6578 2.505	0.6809 2.482	0.7054 2.462	0.5363 2.516	0.5603 2.521
0.6581 2.514	0.6813 2.484	0.7058 2.469	0.5367 2.515	0.5607 2.511
0.6585 2.508	0.6817 2.507	0.7062 2.458	0.5372 2.520	0.5614 2.513
0.6589 2.501	0.6820 2.478	0.7066 2.476	0.5377 2.518	0.5619 2.519
0.6595 2.489	0.6826 2.493	0.7071 2.456	0.5383 2.520	0.5625 2.514
0.6604 2.507	0.6832 2.493	0.7077 2.454	0.5387 2.522	0.5629 2.497
0.6608 2.503	0.6836 2.496	0.7081 2.458	0.5392 2.516	0.5634 2.511
0.6616 2.517	0.6839 2.508	0.7085 2.459	0.5397 2.517	0.5639 2.519
0.6619 2.492	0.6845 2.513	0.7090 2.451	0.5404 2.515	0.5643 2.519
0.6627 2.514	0.6851 2.479	0.7096 2.431	0.5409 2.521	0.5648 2.510
0.6631 2.509	0.6855 2.487	0.7100 2.438	0.5414 2.507	0.5653 2.510
0.6634 2.505	0.6860 2.477	0.7103 2.439	0.5418 2.523	0.5659 2.511
0.6638 2.499	0.6866 2.504	0.7107 2.420	0.5423 2.522	0.5667 2.512
0.6642 2.513	0.6870 2.491	0.7111 2.447	0.5428 2.516	0.5676 2.510

0.5681 2.513	0.5926 2.519	0.6194 2.518	0.6449 2.515	0.6715 2.512
0.5688 2.513	0.5932 2.511	0.6201 2.525	0.6454 2.512	0.6720 2.499
0.5693 2.515	0.5936 2.529	0.6205 2.530	0.6460 2.512	0.6725 2.514
0.5698 2.519	0.5941 2.521	0.6210 2.523	0.6464 2.519	0.6730 2.517
0.5703 2.518	0.5947 2.510	0.6215 2.520	0.6469 2.517	0.6736 2.511
0.5707 2.514	0.5952 2.513	0.6220 2.519	0.6474 2.511	0.6742 2.512
0.5712 2.511	0.5957 2.521	0.6225 2.519	0.6478 2.519	0.6748 2.513
0.5717 2.511	0.5963 2.515	0.6230 2.520	0.6484 2.517	0.6753 2.521
0.5723 2.509	0.5969 2.515	0.6235 2.522	0.6494 2.510	0.6757 2.513
0.5727 2.517	0.5974 2.511	0.6241 2.518	0.6499 2.510	0.6763 2.514
0.5732 2.521	0.5980 2.516	0.6247 2.524	0.6504 2.520	0.6768 2.513
0.5737 2.527	0.5984 2.515	0.6252 2.523	0.6508 2.514	0.6774 2.512
0.5741 2.508	0.5991 2.520	0.6258 2.517	0.6514 2.517	0.6779 2.521
0.5746 2.515	0.6000 2.519	0.6263 2.518	0.6519 2.518	0.6783 2.518
0.5752 2.520	0.6005 2.524	0.6268 2.516	0.6524 2.516	0.6789 2.521
0.5757 2.511	0.6009 2.510	0.6273 2.512	0.6530 2.516	0.6794 2.515
0.5762 2.522	0.6014 2.516	0.6278 2.512	0.6538 2.520	0.6799 2.507
0.5767 2.521	0.6019 2.526	0.6283 2.516	0.6544 2.523	0.6804 2.514
0.5773 2.514	0.6023 2.519	0.6287 2.513	0.6549 2.524	0.6816 2.514
0.5777 2.523	0.6029 2.515	0.6292 2.514	0.6555 2.516	0.6821 2.510
0.5782 2.515	0.6036 2.510	0.6297 2.515	0.6559 2.513	0.6826 2.511
0.5788 2.514	0.6042 2.515	0.6303 2.522	0.6564 2.515	0.6832 2.513
0.5793 2.517	0.6047 2.516	0.6309 2.516	0.6570 2.523	0.6837 2.512
0.5797 2.517	0.6051 2.521	0.6314 2.521	0.6575 2.513	0.6841 2.517
0.5803 2.518	0.6056 2.529	0.6320 2.520	0.6581 2.527	0.6846 2.527
0.5808 2.517	0.6072 2.516	0.6325 2.519	0.6586 2.514	0.6851 2.518
0.5813 2.512	0.6077 2.514	0.6334 2.513	0.6590 2.509	0.6855 2.513
0.5818 2.516	0.6082 2.517	0.6339 2.520	0.6595 2.512	0.6861 2.518
0.5822 2.513	0.6088 2.524	0.6344 2.522	0.6600 2.521	0.6866 2.517
0.5829 2.510	0.6092 2.520	0.6351 2.519	0.6605 2.515	0.6871 2.514
0.5838 2.513	0.6097 2.516	0.6358 2.519	0.6613 2.516	0.6875 2.516
0.5844 2.503	0.6102 2.516	0.6362 2.516	0.6619 2.516	0.6880 2.508
0.5849 2.514	0.6106 2.528	0.6367 2.517	0.6625 2.516	0.6886 2.515
0.5855 2.522	0.6111 2.516	0.6371 2.520	0.6631 2.520	2453797 +
0.5860 2.511	0.6117 2.527	0.6377 2.516	0.6635 2.522	0.4300 2.499
0.5866 2.516	0.6123 2.511	0.6382 2.522	0.6641 2.514	0.4304 2.503
0.5871 2.505	0.6129 2.520	0.6387 2.524	0.6648 2.522	0.4308 2.505
0.5876 2.511	0.6134 2.521	0.6392 2.524	0.6656 2.519	0.4311 2.504
0.5880 2.517	0.6139 2.514	0.6399 2.519	0.6663 2.510	0.4315 2.517
0.5885 2.517	0.6144 2.522	0.6404 2.512	0.6670 2.517	0.4319 2.514
0.5890 2.521	0.6150 2.520	0.6409 2.522	0.6676 2.510	0.4323 2.505
0.5894 2.517	0.6156 2.518	0.6415 2.530	0.6681 2.507	0.4327 2.517
0.5899 2.518	0.6161 2.521	0.6421 2.519	0.6687 2.517	0.4331 2.505
0.5905 2.517	0.6174 2.518	0.6426 2.516	0.6692 2.518	0.4334 2.516
0.5910 2.517	0.6179 2.520	0.6432 2.521	0.6698 2.505	0.4338 2.502
0.5915 2.514	0.6185 2.518	0.6439 2.513	0.6704 2.514	0.4342 2.507
0.5921 2.521	0.6190 2.514	0.6444 2.515	0.6709 2.505	0.4346 2.507

0.4350 2.513	0.4561 2.504	0.4746 2.504	0.4953 2.515	0.5152 2.513
0.4353 2.506	0.4564 2.504	0.4751 2.506	0.4957 2.508	0.5155 2.510
0.4357 2.505	0.4568 2.505	0.4757 2.504	0.4961 2.506	0.5159 2.494
0.4361 2.508	0.4572 2.502	0.4761 2.505	0.4968 2.502	0.5167 2.497
0.4365 2.515	0.4576 2.507	0.4765 2.510	0.4972 2.509	0.5175 2.517
0.4369 2.520	0.4580 2.512	0.4769 2.504	0.4980 2.510	0.5178 2.501
0.4376 2.516	0.4584 2.505	0.4772 2.513	0.4984 2.512	0.5182 2.502
0.4384 2.509	0.4587 2.512	0.4776 2.508	0.4991 2.510	0.5186 2.508
0.4388 2.520	0.4591 2.507	0.4780 2.506	0.4997 2.516	0.5190 2.518
0.4392 2.510	0.4595 2.499	0.4784 2.510	0.5003 2.509	0.5194 2.508
0.4395 2.512	0.4599 2.501	0.4788 2.501	0.5006 2.518	0.5197 2.497
0.4399 2.502	0.4603 2.508	0.4792 2.507	0.5010 2.508	0.5203 2.497
0.4403 2.507	0.4607 2.502	0.4795 2.504	0.5014 2.504	0.5209 2.501
0.4407 2.502	0.4610 2.503	0.4799 2.507	0.5018 2.504	0.5213 2.508
0.4411 2.515	0.4614 2.507	0.4803 2.514	0.5022 2.495	0.5217 2.499
0.4417 2.516	0.4618 2.507	0.4807 2.515	0.5026 2.502	0.5220 2.503
0.4424 2.502	0.4622 2.499	0.4812 2.502	0.5029 2.507	0.5224 2.501
0.4430 2.501	0.4626 2.502	0.4818 2.519	0.5033 2.502	0.5228 2.507
0.4436 2.506	0.4629 2.507	0.4822 2.524	0.5037 2.504	0.5232 2.502
0.4443 2.508	0.4633 2.513	0.4830 2.516	0.5041 2.508	0.5236 2.507
0.4449 2.514	0.4637 2.503	0.4834 2.510	0.5045 2.510	0.5239 2.500
0.4453 2.505	0.4641 2.506	0.4837 2.516	0.5048 2.511	0.5243 2.501
0.4458 2.506	0.4645 2.511	0.4841 2.513	0.5052 2.500	0.5247 2.507
0.4464 2.507	0.4649 2.504	0.4845 2.511	0.5056 2.503	0.5251 2.505
0.4468 2.506	0.4652 2.505	0.4851 2.510	0.5060 2.513	0.5255 2.499
0.4472 2.506	0.4656 2.506	0.4857 2.509	0.5064 2.508	0.5259 2.503
0.4476 2.513	0.4660 2.500	0.486 2.507	0.5068 2.509	0.5262 2.503
0.4479 2.511	0.4664 2.504	0.4864 2.503	0.5071 2.495	0.5266 2.502
0.4483 2.501	0.4668 2.504	0.4868 2.514	0.5075 2.506	0.5283 2.518
0.4487 2.504	0.4671 2.505	0.4872 2.508	0.5079 2.510	0.5289 2.518
0.4496 2.514	0.4675 2.501	0.4876 2.508	0.5083 2.506	0.5293 2.512
0.4500 2.502	0.4679 2.509	0.4879 2.505	0.5087 2.500	0.5297 2.520
0.4503 2.510	0.4683 2.508	0.4892 2.506	0.5090 2.510	0.5301 2.520
0.4507 2.510	0.4692 2.511	0.4896 2.495	0.5094 2.514	0.5304 2.520
0.4511 2.503	0.4696 2.513	0.4900 2.516	0.5098 2.500	0.5308 2.504
0.4515 2.506	0.4700 2.508	0.4903 2.511	0.5102 2.509	0.5312 2.522
0.4519 2.500	0.4704 2.513	0.4907 2.515	0.5106 2.516	0.5320 2.514
0.4522 2.500	0.4707 2.511	0.4911 2.511	0.5110 2.511	0.5323 2.513
0.4526 2.504	0.4711 2.514	0.4915 2.506	0.5113 2.506	0.5327 2.518
0.4530 2.505	0.4715 2.509	0.4919 2.513	0.5117 2.511	0.5331 2.510
0.4534 2.508	0.4719 2.510	0.4922 2.515	0.5121 2.505	0.5335 2.517
0.4538 2.503	0.4723 2.513	0.4926 2.513	0.5125 2.513	0.5339 2.514
0.4542 2.505	0.4727 2.516	0.4934 2.513	0.5129 2.508	0.5343 2.527
0.4545 2.503	0.4730 2.511	0.4938 2.512	0.5133 2.513	0.5348 2.512
0.4549 2.501	0.4734 2.516	0.4942 2.510	0.5136 2.506	0.5354 2.512
0.4553 2.508	0.4738 2.510	0.4945 2.517	0.5140 2.514	0.5358 2.520
0.4557 2.503	0.4742 2.519	0.4949 2.504	0.5146 2.511	0.5362 2.518

0.5365 2.521	0.5568 2.503	0.5781 2.521	0.5976 2.515	0.6173 2.515
0.5369 2.518	0.5572 2.509	0.5785 2.517	0.5980 2.518	0.6179 2.501
0.5375 2.517	0.5576 2.503	0.5789 2.511	0.5984 2.524	0.6183 2.515
0.5385 2.509	0.5579 2.512	0.5793 2.506	0.5989 2.513	0.6187 2.497
0.5388 2.515	0.5583 2.504	0.5797 2.496	0.5995 2.520	0.6190 2.507
0.5392 2.512	0.5587 2.513	0.5800 2.498	0.5999 2.517	0.6196 2.513
0.5396 2.511	0.5591 2.512	0.5804 2.511	0.6003 2.516	0.6202 2.519
0.5402 2.511	0.5595 2.506	0.5808 2.509	0.6007 2.514	0.6206 2.511
0.5408 2.506	0.5598 2.499	0.5812 2.509	0.6010 2.519	0.6213 2.513
0.5415 2.511	0.5602 2.507	0.5816 2.504	0.6014 2.525	0.6217 2.517
0.5419 2.517	0.5606 2.505	0.5821 2.513	0.6018 2.527	0.6221 2.500
0.5427 2.517	0.5610 2.497	0.5827 2.503	0.6022 2.523	0.6225 2.508
0.5430 2.504	0.5616 2.514	0.5831 2.517	0.6026 2.523	0.6229 2.517
0.5434 2.512	0.5621 2.514	0.5835 2.523	0.6029 2.513	0.6232 2.516
0.5438 2.512	0.5627 2.510	0.5839 2.513	0.6033 2.521	0.6238 2.533
0.5442 2.529	0.5633 2.516	0.5842 2.507	0.6037 2.519	0.6245 2.529
0.5446 2.503	0.5637 2.504	0.5846 2.517	0.6041 2.513	0.6251 2.515
0.5450 2.511	0.5640 2.498	0.5850 2.517	0.6045 2.518	0.6255 2.500
0.5453 2.499	0.5644 2.489	0.5854 2.506	0.6049 2.513	0.6259 2.522
0.5457 2.517	0.5648 2.510	0.5858 2.504	0.6052 2.525	0.6263 2.515
0.5461 2.513	0.5652 2.508	0.5861 2.514	0.6056 2.520	0.6267 2.507
0.5465 2.511	0.5660 2.508	0.5867 2.508	0.6068 2.524	0.6271 2.520
0.5470 2.511	0.5663 2.508	0.5873 2.510	0.6072 2.521	0.6274 2.517
0.5476 2.503	0.5678 2.505	0.5877 2.514	0.6076 2.521	0.6278 2.516
0.5480 2.509	0.5682 2.509	0.5881 2.512	0.6080 2.519	0.6282 2.527
0.5484 2.509	0.5686 2.488	0.5884 2.505	0.6083 2.526	0.6286 2.518
0.5488 2.505	0.5690 2.511	0.5888 2.505	0.6087 2.516	0.6290 2.502
0.5492 2.511	0.5693 2.508	0.5892 2.507	0.6091 2.521	0.6293 2.517
0.5495 2.501	0.5697 2.507	0.5896 2.512	0.6095 2.511	0.6297 2.517
0.5499 2.505	0.5701 2.514	0.5903 2.512	0.6099 2.522	0.6301 2.517
0.5503 2.504	0.5705 2.510	0.5907 2.514	0.6102 2.527	0.6305 2.516
0.5507 2.510	0.5709 2.509	0.5911 2.514	0.6106 2.514	0.6309 2.515
0.5511 2.507	0.5712 2.497	0.5915 2.512	0.6110 2.522	0.6313 2.530
0.5514 2.510	0.5716 2.516	0.5919 2.507	0.6114 2.522	0.6316 2.512
0.5518 2.510	0.5720 2.511	0.5923 2.508	0.6118 2.518	0.6320 2.519
0.5522 2.507	0.5724 2.506	0.5926 2.512	0.6122 2.524	0.6324 2.520
0.5526 2.505	0.5728 2.511	0.5930 2.520	0.6125 2.514	0.6328 2.516
0.5530 2.501	0.5732 2.507	0.5934 2.516	0.6129 2.520	0.6332 2.513
0.5534 2.506	0.5735 2.507	0.5938 2.513	0.6133 2.517	0.6335 2.518
0.5537 2.502	0.5739 2.515	0.5942 2.515	0.6137 2.525	0.6339 2.529
0.5541 2.511	0.5743 2.519	0.5945 2.513	0.6141 2.512	0.6349 2.530
0.5545 2.509	0.5747 2.504	0.5949 2.514	0.6147 2.510	0.6355 2.506
0.5549 2.498	0.5752 2.507	0.5953 2.515	0.6152 2.526	0.6358 2.506
0.5553 2.505	0.5762 2.518	0.5957 2.520	0.6156 2.517	0.6362 2.515
0.5556 2.502	0.5768 2.510	0.5961 2.517	0.6160 2.512	0.6366 2.513
0.5560 2.516	0.5774 2.497	0.5966 2.520	0.6164 2.523	0.6374 2.539
0.5564 2.500	0.5777 2.514	0.5972 2.510	0.6167 2.511	0.6377 2.520

0.6385 2.518	0.6630 2.535	0.4967 2.524	0.5165 2.521	0.5501 2.533
0.6389 2.515	0.6634 2.543	0.4971 2.522	0.5169 2.518	0.5509 2.528
0.6394 2.523	0.6638 2.529	0.4975 2.523	0.5173 2.522	0.5513 2.526
0.6400 2.517	0.6641 2.536	0.4978 2.527	0.5177 2.517	0.5521 2.527
0.6407 2.533	0.6645 2.534	0.4982 2.508	0.5180 2.513	0.5525 2.527
0.6412 2.519	0.6649 2.536	0.4986 2.515	0.5184 2.516	0.5529 2.517
0.6418 2.518	0.6653 2.535	0.4990 2.509	0.5188 2.519	0.5541 2.507
0.6425 2.519	0.6657 2.538	0.4994 2.523	0.5198 2.516	0.5550 2.526
0.6431 2.510	2453801 +	0.5001 2.511	0.5203 2.518	0.5560 2.533
0.6435 2.519	0.4806 2.513	0.5004 2.516	0.5207 2.515	0.5569 2.536
0.6439 2.525	0.4810 2.526	0.5008 2.508	0.5211 2.514	0.5574 2.530
0.6442 2.528	0.4816 2.519	0.5012 2.515	0.5215 2.522	0.5580 2.523
0.6446 2.524	0.4822 2.517	0.5016 2.514	0.5219 2.521	0.5594 2.530
0.6468 2.524	0.4828 2.519	0.5020 2.516	0.5223 2.516	0.5598 2.522
0.6473 2.524	0.4833 2.512	0.5024 2.520	0.5226 2.523	0.5602 2.528
0.6477 2.527	0.4841 2.523	0.5027 2.520	0.5230 2.518	0.5608 2.513
0.6481 2.534	0.4845 2.529	0.5035 2.521	0.5234 2.511	0.5613 2.533
0.6485 2.520	0.4848 2.520	0.5039 2.513	0.5240 2.511	0.5617 2.528
0.6488 2.530	0.4852 2.526	0.5043 2.516	0.5246 2.513	0.5623 2.518
0.6492 2.531	0.4856 2.524	0.5048 2.520	0.5251 2.515	0.5631 2.520
0.6496 2.524	0.4860 2.518	0.5050 2.522	0.5261 2.503	0.5636 2.529
0.6500 2.534	0.4864 2.516	0.5054 2.511	0.5277 2.501	0.5642 2.521
0.6504 2.527	0.4868 2.523	0.5058 2.512	0.5303 2.506	0.5650 2.525
0.6508 2.542	0.4871 2.531	0.5062 2.525	0.5307 2.514	0.5657 2.523
0.6517 2.513	0.4875 2.526	0.5066 2.515	0.5311 2.519	0.5663 2.527
0.6525 2.520	0.4879 2.528	0.5070 2.511	0.5314 2.512	0.5667 2.526
0.6531 2.528	0.4883 2.521	0.5075 2.508	0.5318 2.510	0.5671 2.520
0.6534 2.523	0.4887 2.521	0.5084 2.502	0.5324 2.508	0.5675 2.527
0.6538 2.518	0.4890 2.522	0.5092 2.511	0.5330 2.501	0.5678 2.523
0.6542 2.516	0.4894 2.520	0.5096 2.506	0.5338 2.494	0.5686 2.519
0.6546 2.519	0.4898 2.516	0.5100 2.509	0.5351 2.491	0.5694 2.517
0.6550 2.513	0.4902 2.530	0.5104 2.516	0.5402 2.502	0.5698 2.522
0.6553 2.537	0.4906 2.518	0.5108 2.513	0.5408 2.494	0.5705 2.519
0.6559 2.540	0.4910 2.522	0.5112 2.512	0.5416 2.498	0.5709 2.501
0.6566 2.528	0.4913 2.525	0.5115 2.515	0.5423 2.507	0.5713 2.526
0.6573 2.527	0.4917 2.535	0.5119 2.515	0.5433 2.499	0.5717 2.534
0.6579 2.527	0.4921 2.516	0.5123 2.520	0.5439 2.507	0.5727 2.529
0.6584 2.534	0.4925 2.525	0.5127 2.527	0.5444 2.512	0.5740 2.523
0.6588 2.516	0.4929 2.521	0.5131 2.514	0.5448 2.507	0.5743 2.538
0.6595 2.523	0.4932 2.523	0.5135 2.508	0.5452 2.514	0.5747 2.542
0.6599 2.532	0.4936 2.523	0.5138 2.516	0.5456 2.512	0.5753 2.530
0.6603 2.537	0.4940 2.527	0.5142 2.508	0.5460 2.525	0.5759 2.520
0.6609 2.523	0.4944 2.519	0.5146 2.514	0.5465 2.521	0.5763 2.531
0.6615 2.535	0.4948 2.516	0.5150 2.517	0.5471 2.512	0.5768 2.530
0.6618 2.524	0.4952 2.517	0.5154 2.523	0.5477 2.526	0.5774 2.523
0.6622 2.548	0.4959 2.512	0.5157 2.518	0.5483 2.538	0.5778 2.532
0.6626 2.538	0.4963 2.526	0.5161 2.516	0.5491 2.528	0.5782 2.533

0.5795 2.527	0.6015 2.538	0.6221 2.541	0.6411 2.539	0.6609 2.511
0.5798 2.527	0.6019 2.535	0.6225 2.547	0.6415 2.536	0.6613 2.531
0.5802 2.534	0.6022 2.537	0.6229 2.542	0.6419 2.541	0.6617 2.520
0.5806 2.530	0.6026 2.538	0.6233 2.538	0.6422 2.536	0.6621 2.524
0.5810 2.535	0.6030 2.533	0.6237 2.545	0.6426 2.536	0.6625 2.528
0.5814 2.529	0.6036 2.535	0.6240 2.543	0.6430 2.537	0.6629 2.531
0.5818 2.523	0.6042 2.537	0.6244 2.555	0.6434 2.536	0.6636 2.516
0.5825 2.529	0.6045 2.539	0.6248 2.545	0.6438 2.522	0.6640 2.515
0.5831 2.522	0.6049 2.542	0.6252 2.541	0.6441 2.532	0.6644 2.516
0.5841 2.528	0.6053 2.547	0.6256 2.542	0.6445 2.529	0.6648 2.522
0.5852 2.544	0.6057 2.535	0.6260 2.526	0.6449 2.530	0.6652 2.523
0.5864 2.542	0.6061 2.538	0.6263 2.539	0.6453 2.530	0.6655 2.530
0.5867 2.532	0.6065 2.553	0.6267 2.547	0.6457 2.539	0.6659 2.516
0.5871 2.533	0.6068 2.539	0.6271 2.543	0.6461 2.539	0.6667 2.525
0.5875 2.537	0.6072 2.530	0.6275 2.538	0.6466 2.528	0.6671 2.507
0.5879 2.535	0.6076 2.539	0.6279 2.548	0.6472 2.529	0.6678 2.513
0.5883 2.529	0.6080 2.543	0.6283 2.547	0.6478 2.535	0.6682 2.515
0.5886 2.540	0.6084 2.539	0.6286 2.543	0.6484 2.536	0.6686 2.517
0.5890 2.539	0.6087 2.545	0.6290 2.547	0.6487 2.526	0.6690 2.514
0.5894 2.535	0.6091 2.543	0.6294 2.544	0.6491 2.533	0.6696 2.516
0.5898 2.529	0.6100 2.538	0.6298 2.549	0.6495 2.534	0.6701 2.522
0.5902 2.530	0.6107 2.538	0.6302 2.537	0.6499 2.535	0.6705 2.520
0.5906 2.525	0.6112 2.542	0.6305 2.536	0.6503 2.522	0.6709 2.517
0.5909 2.527	0.6118 2.540	0.6309 2.541	0.6506 2.525	0.6713 2.517
0.5913 2.534	0.6122 2.539	0.6315 2.537	0.6510 2.528	0.6716 2.519
0.5917 2.541	0.6126 2.541	0.6321 2.531	0.6514 2.533	0.6720 2.517
0.5921 2.528	0.6130 2.534	0.6325 2.541	0.6518 2.532	0.6724 2.511
0.5925 2.518	0.6133 2.533	0.6328 2.528	0.6522 2.526	0.6728 2.518
0.5929 2.518	0.6137 2.537	0.6332 2.538	0.6526 2.527	0.6732 2.508
0.5932 2.531	0.6141 2.538	0.6336 2.543	0.6529 2.529	0.6736 2.518
0.5936 2.535	0.6145 2.541	0.6340 2.538	0.6533 2.521	0.6740 2.498
0.5944 2.532	0.6149 2.538	0.6344 2.537	0.6537 2.525	0.6743 2.513
0.5948 2.524	0.6152 2.540	0.6348 2.518	0.6541 2.527	0.6747 2.523
0.5951 2.531	0.6156 2.534	0.6351 2.538	0.6545 2.524	0.6751 2.515
0.5955 2.541	0.6160 2.539	0.6355 2.536	0.6549 2.529	0.6755 2.526
0.5959 2.539	0.6164 2.535	0.6359 2.538	0.6552 2.526	0.6761 2.508
0.5963 2.541	0.6170 2.537	0.6363 2.543	0.6556 2.526	0.6766 2.510
0.5967 2.531	0.6175 2.529	0.6367 2.539	0.6560 2.523	0.6770 2.524
0.5971 2.538	0.6179 2.544	0.6370 2.538	0.6564 2.526	0.6774 2.512
0.5974 2.528	0.6191 2.530	0.6374 2.542	0.6568 2.518	2453802 +
0.5978 2.535	0.6195 2.544	0.6378 2.540	0.6571 2.524	0.2849 2.523
0.5987 2.530	0.6198 2.549	0.6388 2.534	0.6575 2.523	0.2855 2.510
0.5996 2.531	0.6202 2.541	0.6392 2.535	0.6587 2.523	0.2861 2.516
0.6000 2.532	0.6206 2.539	0.6396 2.528	0.6594 2.529	0.2866 2.507
0.6003 2.532	0.6210 2.542	0.6399 2.536	0.6598 2.514	0.2872 2.519
0.6007 2.535	0.6214 2.538	0.6403 2.539	0.6602 2.512	0.2877 2.514
0.6011 2.529	0.6218 2.538	0.6407 2.540	0.6606 2.520	0.2881 2.515

0.2887 2.513	0.3148 2.524	0.3412 2.512	0.3668 2.520	0.3911 2.521
0.2894 2.513	0.3154 2.508	0.3419 2.523	0.3673 2.526	0.3916 2.525
0.2900 2.512	0.3163 2.511	0.3424 2.515	0.3677 2.516	0.3922 2.519
0.2907 2.508	0.3169 2.518	0.3428 2.514	0.3682 2.512	0.3927 2.521
0.2913 2.515	0.3175 2.520	0.3433 2.513	0.3686 2.518	0.3935 2.519
0.2919 2.526	0.3180 2.519	0.3437 2.511	0.3692 2.514	0.3944 2.517
0.2930 2.523	0.3184 2.520	0.3442 2.519	0.3697 2.511	0.3950 2.520
0.2935 2.517	0.3189 2.517	0.3446 2.510	0.3701 2.513	0.3955 2.521
0.2942 2.506	0.3194 2.522	0.3452 2.526	0.3706 2.512	0.3960 2.517
0.2947 2.505	0.3202 2.523	0.3458 2.523	0.3710 2.514	0.3966 2.516
0.2952 2.520	0.3207 2.516	0.3465 2.519	0.3716 2.527	0.3972 2.522
0.2957 2.508	0.3213 2.509	0.3474 2.511	0.3722 2.518	0.3976 2.521
0.2962 2.513	0.3221 2.519	0.3478 2.525	0.3727 2.524	0.3981 2.524
0.2968 2.509	0.3227 2.517	0.3484 2.512	0.3731 2.511	0.3986 2.522
0.2974 2.510	0.3231 2.518	0.3490 2.518	0.3736 2.522	0.3992 2.522
0.2980 2.520	0.3237 2.520	0.3495 2.523	0.3743 2.517	0.3997 2.526
0.2986 2.514	0.3244 2.522	0.3499 2.514	0.3748 2.522	0.4002 2.530
0.2991 2.514	0.3249 2.516	0.3504 2.520	0.3753 2.520	0.4007 2.520
0.2995 2.514	0.3255 2.519	0.3509 2.516	0.3758 2.521	0.4012 2.522
0.3002 2.519	0.3261 2.510	0.3515 2.512	0.3763 2.516	0.4017 2.520
0.3010 2.520	0.3266 2.514	0.3521 2.521	0.3768 2.526	0.4022 2.519
0.3017 2.514	0.3271 2.523	0.3526 2.512	0.3772 2.527	0.4027 2.516
0.3022 2.513	0.3278 2.516	0.3532 2.521	0.3779 2.525	0.4031 2.522
0.3026 2.516	0.3283 2.512	0.3538 2.511	0.3787 2.514	0.4036 2.526
0.3031 2.511	0.3287 2.525	0.3543 2.517	0.3792 2.518	0.4040 2.519
0.3036 2.519	0.3292 2.511	0.3548 2.508	0.3796 2.527	0.4045 2.518
0.3043 2.509	0.3296 2.523	0.3553 2.518	0.3801 2.513	0.4049 2.527
0.3050 2.502	0.3302 2.522	0.3559 2.513	0.3805 2.520	0.4054 2.522
0.3056 2.512	0.3308 2.519	0.3564 2.524	0.3811 2.510	0.4058 2.527
0.3061 2.519	0.3317 2.522	0.3569 2.514	0.3816 2.524	0.4064 2.523
0.3066 2.514	0.3323 2.521	0.3573 2.519	0.3820 2.518	0.4070 2.519
0.3070 2.516	0.3328 2.515	0.3578 2.514	0.3825 2.522	0.4078 2.520
0.3075 2.524	0.3333 2.516	0.3584 2.512	0.3829 2.518	0.4083 2.523
0.3079 2.507	0.3337 2.515	0.3588 2.513	0.3835 2.519	0.4090 2.525
0.3084 2.507	0.3342 2.524	0.3593 2.516	0.3840 2.524	0.4096 2.518
0.3089 2.507	0.3347 2.521	0.3598 2.520	0.3845 2.521	0.4101 2.519
0.3096 2.504	0.3355 2.518	0.3604 2.517	0.3849 2.521	0.4105 2.520
0.3101 2.509	0.3360 2.523	0.3610 2.521	0.3854 2.522	0.4110 2.525
0.3105 2.516	0.3365 2.522	0.3615 2.520	0.3858 2.524	0.4114 2.515
0.3110 2.511	0.3369 2.529	0.3629 2.514	0.3863 2.518	0.4123 2.524
0.3114 2.521	0.3374 2.520	0.3633 2.514	0.3868 2.515	0.4128 2.526
0.3119 2.516	0.3378 2.516	0.3639 2.518	0.3873 2.517	0.4132 2.524
0.3123 2.520	0.3384 2.531	0.3644 2.512	0.3878 2.516	0.4137 2.527
0.3129 2.510	0.3391 2.515	0.3649 2.510	0.3883 2.520	0.4142 2.528
0.3134 2.503	0.3396 2.515	0.3654 2.515	0.3889 2.525	0.4146 2.517
0.3138 2.516	0.3401 2.515	0.3659 2.513	0.3897 2.512	0.4151 2.523
0.3143 2.518	0.3406 2.513	0.3663 2.515	0.3904 2.518	0.4155 2.522

0.4160 2.527	0.4425 2.519	0.4676 2.528	0.4917 2.515	0.5150 2.516
0.4164 2.523	0.4439 2.515	0.4608 2.520	0.4921 2.513	0.5154 2.519
0.4169 2.525	0.4444 2.517	0.4685 2.521	0.4927 2.517	0.5159 2.514
0.4173 2.521	0.4449 2.507	0.4689 2.518	0.4932 2.515	0.5164 2.513
0.4179 2.524	0.4454 2.522	0.4694 2.520	0.4936 2.521	0.5171 2.518
0.4186 2.523	0.4459 2.523	0.4698 2.519	0.4941 2.517	0.5177 2.516
0.4192 2.513	0.4465 2.523	0.4703 2.519	0.4946 2.517	0.5182 2.515
0.4197 2.521	0.4470 2.515	0.4707 2.519	0.4951 2.513	0.5186 2.515
0.4202 2.519	0.4476 2.522	0.4712 2.527	0.4956 2.515	0.5191 2.518
0.4207 2.521	0.4480 2.525	0.4716 2.516	0.4961 2.520	0.5195 2.511
0.4212 2.520	0.4486 2.519	0.4721 2.519	0.4965 2.515	0.5200 2.508
0.4218 2.524	0.4491 2.515	0.4726 2.516	0.4971 2.511	0.5206 2.517
0.4222 2.516	0.4496 2.508	0.4730 2.521	0.4976 2.510	0.5211 2.515
0.4227 2.515	0.4500 2.517	0.4735 2.520	0.4980 2.520	0.5216 2.517
0.4233 2.522	0.4505 2.518	0.4739 2.521	0.4985 2.516	0.5225 2.516
0.4239 2.518	0.4509 2.513	0.4744 2.517	0.4989 2.517	0.5233 2.516
0.4246 2.519	0.4514 2.513	0.4748 2.519	0.4994 2.511	0.5238 2.519
0.4253 2.528	0.4520 2.520	0.4756 2.520	0.4998 2.518	0.5243 2.515
0.4258 2.523	0.4525 2.516	0.4761 2.519	0.5003 2.510	0.5249 2.512
0.4263 2.517	0.4529 2.526	0.4765 2.519	0.5009 2.516	0.5254 2.521
0.4267 2.513	0.4534 2.525	0.4771 2.520	0.5014 2.516	0.5259 2.521
0.4272 2.520	0.4538 2.521	0.4777 2.514	0.5018 2.521	0.5264 2.515
0.4278 2.519	0.4543 2.523	0.4782 2.513	0.5023 2.517	0.5269 2.512
0.4282 2.518	0.4547 2.524	0.4786 2.519	0.5028 2.512	0.5276 2.515
0.4287 2.523	0.4552 2.524	0.4791 2.515	0.5035 2.520	0.5280 2.518
0.4292 2.516	0.4558 2.522	0.4797 2.515	0.5041 2.522	0.5285 2.516
0.4296 2.520	0.4562 2.520	0.4802 2.511	0.5045 2.520	0.5290 2.521
0.4301 2.519	0.4567 2.516	0.4807 2.521	0.5050 2.516	0.5295 2.514
0.4305 2.515	0.4572 2.523	0.4812 2.525	0.5054 2.519	0.5300 2.521
0.4311 2.515	0.4576 2.524	0.4817 2.519	0.5060 2.521	0.5304 2.515
0.4318 2.508	0.4582 2.512	0.4821 2.514	0.5069 2.519	0.5309 2.514
0.4323 2.510	0.4591 2.517	0.4827 2.517	0.5075 2.515	0.5314 2.515
0.4328 2.514	0.4603 2.518	0.4833 2.515	0.5080 2.519	0.5318 2.509
0.4332 2.515	0.4608 2.519	0.4838 2.511	0.5085 2.520	0.5324 2.515
0.4337 2.518	0.4612 2.521	0.4842 2.518	0.5089 2.519	0.5331 2.517
0.4342 2.516	0.4617 2.517	0.4847 2.524	0.5094 2.519	0.5338 2.509
0.4347 2.514	0.4623 2.517	0.4852 2.513	0.5098 2.520	0.5344 2.517
0.4352 2.512	0.4628 2.519	0.4856 2.517	0.5103 2.517	0.5348 2.522
0.4357 2.521	0.4632 2.516	0.4861 2.514	0.5108 2.522	0.5354 2.515
0.4361 2.513	0.4637 2.518	0.4867 2.508	0.5112 2.513	0.5359 2.517
0.4366 2.517	0.4641 2.516	0.4872 2.512	0.5118 2.518	0.5364 2.514
0.4374 2.517	0.4646 2.514	0.4877 2.519	0.5123 2.513	0.5369 2.513
0.4380 2.513	0.4653 2.521	0.4882 2.520	0.5127 2.513	0.5378 2.518
0.4384 2.516	0.4658 2.518	0.4886 2.520	0.5132 2.514	0.5390 2.521
0.4389 2.514	0.4662 2.522	0.4892 2.518	0.5136 2.519	0.5395 2.516
0.4394 2.515	0.4667 2.518	0.4898 2.516	0.5141 2.519	0.5400 2.514
0.4400 2.517	0.4671 2.519	0.4903 2.524	0.5145 2.518	0.5406 2.516

0.5413 2.519	0.5659 2.521	0.5910 2.526	0.6158 2.524	0.6406 2.519
0.5418 2.519	0.5663 2.524	0.5914 2.528	0.6163 2.527	0.6410 2.524
0.5422 2.516	0.5668 2.530	0.5919 2.524	0.6168 2.529	0.6415 2.530
0.5428 2.515	0.5672 2.518	0.5923 2.528	0.6173 2.527	0.6419 2.532
0.5433 2.524	0.5677 2.521	0.5931 2.518	0.6183 2.522	0.6424 2.530
0.5439 2.520	0.5683 2.518	0.5936 2.517	0.6187 2.523	0.6429 2.532
0.5444 2.513	0.5687 2.523	0.5941 2.518	0.6192 2.528	0.6436 2.523
0.5450 2.517	0.5695 2.523	0.5946 2.523	0.6197 2.520	0.6442 2.521
0.5454 2.520	0.5706 2.523	0.5951 2.528	0.6203 2.521	0.6448 2.528
0.5459 2.517	0.5711 2.530	0.5957 2.524	0.6209 2.526	0.6454 2.523
0.5465 2.519	0.5715 2.528	0.5961 2.521	0.6214 2.529	0.6459 2.520
0.5469 2.518	0.5720 2.524	0.5967 2.523	0.6219 2.525	0.6464 2.527
0.5474 2.520	0.5724 2.525	0.5973 2.518	0.6224 2.523	0.6469 2.522
0.5478 2.519	0.5729 2.523	0.5978 2.521	0.6230 2.524	0.6474 2.525
0.5485 2.519	0.5733 2.525	0.5983 2.526	0.6234 2.524	0.6481 2.529
0.5490 2.520	0.5738 2.526	0.5988 2.525	0.6239 2.529	0.6486 2.534
0.5495 2.525	0.5743 2.523	0.5993 2.519	0.6244 2.522	0.6495 2.532
0.5500 2.518	0.5750 2.523	0.5998 2.526	0.6249 2.525	0.6501 2.524
0.5504 2.519	0.5755 2.526	0.6002 2.518	0.6255 2.523	0.6507 2.529
0.5510 2.517	0.5759 2.526	0.6008 2.516	0.6260 2.528	0.6511 2.531
0.5515 2.523	0.5764 2.519	0.6026 2.517	0.6266 2.524	0.6516 2.526
0.5519 2.519	0.5768 2.527	0.6032 2.523	0.6271 2.517	0.6520 2.527
0.5524 2.521	0.5773 2.517	0.6037 2.528	0.6275 2.521	0.6525 2.530
0.5529 2.525	0.5779 2.520	0.6041 2.526	0.6280 2.524	0.6530 2.524
0.5537 2.521	0.5784 2.527	0.6046 2.521	0.6285 2.527	0.6534 2.534
0.5545 2.528	0.5789 2.524	0.6050 2.529	0.6289 2.527	0.6539 2.522
0.5550 2.521	0.5794 2.529	0.6055 2.524	0.6294 2.522	0.6547 2.526
0.5556 2.526	0.5800 2.527	0.6060 2.530	0.6300 2.524	0.6554 2.529
0.5560 2.523	0.5806 2.518	0.6064 2.520	0.6304 2.529	0.6559 2.528
0.5566 2.521	0.5811 2.521	0.6069 2.523	0.6309 2.532	0.6565 2.526
0.5571 2.520	0.5816 2.525	0.6073 2.530	0.6314 2.527	0.6569 2.523
0.5577 2.522	0.5822 2.527	0.6078 2.525	0.6319 2.532	0.6574 2.531
0.5582 2.529	0.5827 2.519	0.6083 2.529	0.6326 2.524	0.6579 2.530
0.5586 2.519	0.5832 2.523	0.6090 2.521	0.6330 2.530	0.6585 2.527
0.5591 2.526	0.5836 2.528	0.6094 2.518	0.6342 2.528	0.6591 2.525
0.5595 2.527	0.5842 2.524	0.6099 2.521	0.6346 2.524	0.6595 2.531
0.5600 2.528	0.5848 2.520	0.6104 2.517	0.6351 2.530	0.6601 2.533
0.5606 2.524	0.5855 2.524	0.6110 2.523	0.6356 2.529	0.6606 2.534
0.5610 2.523	0.5863 2.522	0.6114 2.528	0.6361 2.532	0.6610 2.536
0.5615 2.526	0.5867 2.526	0.6119 2.517	0.6366 2.530	0.6615 2.534
0.5622 2.523	0.5873 2.528	0.6124 2.526	0.6371 2.526	0.6619 2.529
0.5628 2.523	0.5879 2.524	0.6129 2.531	0.6375 2.538	0.6624 2.530
0.5635 2.527	0.5884 2.522	0.6134 2.518	0.6381 2.531	0.6630 2.529
0.5641 2.519	0.5889 2.519	0.6138 2.520	0.6386 2.522	0.6635 2.531
0.5645 2.522	0.5894 2.527	0.6144 2.518	0.6390 2.531	0.6641 2.531
0.5650 2.525	0.5899 2.523	0.6149 2.530	0.6395 2.521	0.6645 2.523
0.5654 2.530	0.5905 2.525	0.6154 2.529	0.6401 2.519	2453803 +

0.3051 2.514	0.3272 2.502	0.3509 2.516	0.3719 2.507	0.3925 2.510
0.3057 2.491	0.3276 2.508	0.3513 2.519	0.3723 2.508	0.3930 2.522
0.3062 2.506	0.3280 2.524	0.3517 2.516	0.3731 2.511	0.3934 2.522
0.3066 2.514	0.3283 2.525	0.3521 2.520	0.3735 2.511	0.3939 2.514
0.3070 2.504	0.3287 2.520	0.3524 2.514	0.3739 2.511	0.3945 2.527
0.3074 2.500	0.3291 2.516	0.3528 2.520	0.3746 2.509	0.3949 2.522
0.3078 2.499	0.3295 2.513	0.3532 2.506	0.3750 2.513	0.3953 2.519
0.3083 2.507	0.3299 2.519	0.3536 2.510	0.3754 2.512	0.3957 2.516
0.3089 2.518	0.3303 2.526	0.3542 2.508	0.3758 2.511	0.3961 2.514
0.3093 2.518	0.3306 2.510	0.3547 2.512	0.3762 2.520	0.3964 2.523
0.3097 2.505	0.3312 2.507	0.3553 2.518	0.3765 2.511	0.3968 2.523
0.3101 2.513	0.3318 2.502	0.3559 2.499	0.3769 2.512	0.3972 2.516
0.3105 2.510	0.3322 2.515	0.3563 2.517	0.3773 2.517	0.3976 2.524
0.3110 2.507	0.3328 2.517	0.3567 2.515	0.3777 2.513	0.3980 2.515
0.3118 2.511	0.3333 2.515	0.3570 2.509	0.3781 2.509	0.3986 2.515
0.3126 2.504	0.3339 2.517	0.3574 2.512	0.3785 2.512	0.3993 2.517
0.3134 2.511	0.3345 2.507	0.3578 2.513	0.3788 2.509	0.3999 2.521
0.3139 2.511	0.3349 2.518	0.3584 2.511	0.3792 2.510	0.4005 2.520
0.3143 2.510	0.3354 2.514	0.3590 2.514	0.3796 2.520	0.4010 2.511
0.3147 2.511	0.3362 2.513	0.3593 2.506	0.3800 2.517	0.4014 2.511
0.3151 2.511	0.3368 2.517	0.3597 2.514	0.3813 2.525	0.4018 2.520
0.3155 2.510	0.3372 2.513	0.3601 2.511	0.3819 2.520	0.4022 2.522
0.3158 2.514	0.3375 2.522	0.3605 2.515	0.3823 2.507	0.4029 2.521
0.3162 2.504	0.3379 2.517	0.3613 2.514	0.3827 2.508	0.4034 2.512
0.3168 2.504	0.3385 2.510	0.3616 2.509	0.3834 2.521	0.4040 2.505
0.3176 2.510	0.3395 2.510	0.3620 2.518	0.3838 2.515	0.4044 2.514
0.3181 2.511	0.3405 2.518	0.3624 2.513	0.3842 2.507	0.4052 2.515
0.3185 2.517	0.3410 2.519	0.3628 2.509	0.3846 2.508	0.4056 2.509
0.3189 2.511	0.3416 2.515	0.3641 2.514	0.3849 2.515	0.4059 2.505
0.3193 2.505	0.3422 2.509	0.3646 2.517	0.3853 2.512	0.4063 2.516
0.3197 2.515	0.3425 2.509	0.3650 2.514	0.3857 2.512	0.4067 2.516
0.3201 2.515	0.3429 2.509	0.3654 2.515	0.3861 2.517	0.4071 2.507
0.3204 2.503	0.3433 2.519	0.3658 2.512	0.3865 2.517	0.4075 2.488
0.3208 2.505	0.3440 2.522	0.3662 2.516	0.3869 2.516	0.4079 2.508
0.3212 2.510	0.3444 2.511	0.3666 2.513	0.3872 2.515	0.4084 2.521
0.3216 2.504	0.3448 2.516	0.3670 2.517	0.3876 2.512	0.4090 2.518
0.3220 2.503	0.3452 2.514	0.3673 2.507	0.3880 2.512	0.4094 2.527
0.3224 2.503	0.3455 2.529	0.3677 2.514	0.3884 2.518	0.4098 2.514
0.3227 2.497	0.3459 2.520	0.3681 2.518	0.3888 2.523	0.4102 2.512
0.3231 2.510	0.3463 2.517	0.3685 2.514	0.3892 2.515	0.4105 2.514
0.3235 2.503	0.3469 2.511	0.3689 2.521	0.3895 2.516	0.4109 2.503
0.3242 2.503	0.3477 2.516	0.3692 2.511	0.3899 2.509	0.4113 2.509
0.3249 2.513	0.3482 2.518	0.3696 2.505	0.3903 2.500	0.4119 2.513
0.3253 2.517	0.3488 2.521	0.3700 2.518	0.3907 2.519	0.4125 2.516
0.3259 2.522	0.3494 2.510	0.3704 2.510	0.3911 2.515	0.4128 2.508
0.3264 2.516	0.3501 2.524	0.3708 2.512	0.3915 2.512	0.4132 2.512
0.3268 2.509	0.3505 2.520	0.3713 2.511	0.3918 2.514	0.4136 2.515

0.4140 2.512	0.4358 2.509	0.4567 2.511	0.4813 2.527	0.5045 2.515
0.4144 2.515	0.4361 2.512	0.4571 2.517	0.4829 2.524	0.5051 2.519
0.4148 2.521	0.4365 2.510	0.4583 2.509	0.4838 2.515	0.5059 2.526
0.4151 2.510	0.4369 2.513	0.4587 2.511	0.4842 2.522	0.5064 2.524
0.4155 2.513	0.4373 2.500	0.4590 2.516	0.4846 2.526	0.5070 2.520
0.4159 2.520	0.4377 2.517	0.4596 2.515	0.4850 2.524	0.5076 2.518
0.4163 2.512	0.4381 2.504	0.4602 2.518	0.4854 2.518	0.5080 2.523
0.4167 2.499	0.4384 2.513	0.4606 2.515	0.4858 2.527	0.5084 2.521
0.4171 2.508	0.4388 2.516	0.4610 2.517	0.4861 2.520	0.5087 2.518
0.4174 2.510	0.4392 2.508	0.4613 2.522	0.4867 2.525	0.5091 2.508
0.4178 2.518	0.4398 2.512	0.4629 2.514	0.4875 2.523	0.5095 2.505
0.4182 2.523	0.4404 2.509	0.4633 2.517	0.4881 2.525	0.5099 2.511
0.4186 2.510	0.4407 2.512	0.4637 2.515	0.4884 2.509	0.5103 2.522
0.4192 2.506	0.4411 2.524	0.4652 2.508	0.4888 2.523	0.5107 2.528
0.4198 2.505	0.4415 2.513	0.4656 2.512	0.4892 2.528	0.5110 2.508
0.4201 2.512	0.4425 2.518	0.4664 2.509	0.4896 2.516	0.5114 2.503
0.4205 2.508	0.4431 2.513	0.4670 2.509	0.4900 2.518	0.5120 2.503
0.4209 2.512	0.4437 2.512	0.4678 2.510	0.4904 2.512	0.5126 2.514
0.4217 2.511	0.4441 2.516	0.4683 2.508	0.4907 2.509	0.5130 2.512
0.4227 2.512	0.4445 2.522	0.4687 2.521	0.4913 2.514	0.5134 2.521
0.4231 2.514	0.4448 2.516	0.4691 2.520	0.4919 2.523	0.5137 2.509
0.4235 2.507	0.4456 2.516	0.4695 2.519	0.4922 2.520	0.5141 2.510
0.4239 2.508	0.4464 2.509	0.4700 2.529	0.4927 2.519	0.5145 2.522
0.4243 2.508	0.4470 2.511	0.4706 2.527	0.4930 2.525	0.5149 2.523
0.4248 2.516	0.4475 2.516	0.4712 2.522	0.4934 2.517	0.5153 2.514
0.4254 2.512	0.4479 2.510	0.4718 2.531	0.4938 2.514	0.5157 2.514
0.4258 2.504	0.4483 2.512	0.4724 2.510	0.4942 2.511	0.5160 2.518
0.4262 2.514	0.4487 2.513	0.4731 2.522	0.4946 2.511	0.5164 2.517
0.4266 2.514	0.4492 2.516	0.4739 2.519	0.4950 2.512	0.5170 2.510
0.4269 2.505	0.4498 2.517	0.4744 2.518	0.4953 2.524	0.5176 2.518
0.4275 2.515	0.4502 2.508	0.4748 2.522	0.4957 2.516	0.5180 2.527
0.4281 2.505	0.4506 2.521	0.4752 2.514	0.4963 2.519	0.5183 2.521
0.4285 2.512	0.4510 2.509	0.4756 2.516	0.4969 2.522	0.5187 2.511
0.4291 2.502	0.4514 2.515	0.4760 2.521	0.4973 2.511	0.5191 2.519
0.4296 2.503	0.4517 2.513	0.4764 2.523	0.4976 2.522	0.5197 2.519
0.4302 2.511	0.4521 2.513	0.4767 2.516	0.4908 2.521	0.5203 2.522
0.4308 2.516	0.4525 2.515	0.4771 2.517	0.4984 2.516	0.5206 2.514
0.4312 2.515	0.4529 2.514	0.4775 2.517	0.4988 2.518	0.5210 2.513
0.4315 2.506	0.4533 2.524	0.4779 2.522	0.4992 2.516	0.5218 2.512
0.4319 2.502	0.4537 2.508	0.4783 2.515	0.4996 2.525	0.5226 2.515
0.4325 2.515	0.4540 2.516	0.4787 2.525	0.4999 2.516	0.5230 2.515
0.4331 2.514	0.4544 2.523	0.4790 2.516	0.5003 2.521	0.5234 2.515
0.4335 2.508	0.4548 2.504	0.4794 2.528	0.5009 2.515	0.5238 2.521
0.4340 2.503	0.4552 2.512	0.4798 2.518	0.5017 2.512	0.5242 2.509
0.4346 2.508	0.4556 2.516	0.4802 2.518	0.5026 2.521	0.5249 2.500
0.4350 2.504	0.4560 2.516	0.4806 2.527	0.5034 2.513	0.5253 2.517
0.4354 2.517	0.4563 2.502	0.4810 2.519	0.5040 2.513	0.5261 2.524

0.5265 2.509	0.5493 2.509	0.5711 2.497	0.3747 2.502	0.3978 2.512
0.5269 2.510	0.5497 2.505	0.5715 2.521	0.3751 2.507	0.3986 2.493
0.5272 2.517	0.5501 2.511	0.5719 2.508	0.3755 2.505	0.3991 2.517
0.5276 2.512	0.5505 2.502	0.5723 2.516	0.3760 2.504	0.3997 2.520
0.5280 2.511	0.5509 2.509	0.5727 2.508	0.3766 2.506	0.4001 2.505
0.5284 2.512	0.5513 2.505	0.5731 2.513	0.3772 2.503	0.4005 2.513
0.5292 2.508	0.5516 2.510	0.5734 2.511	0.3778 2.498	0.4009 2.517
0.5295 2.509	0.5520 2.506	0.5738 2.519	0.3782 2.519	0.4014 2.516
0.5299 2.503	0.5524 2.506	0.5742 2.506	0.3787 2.501	0.4020 2.510
0.5303 2.518	0.5528 2.503	0.5750 2.512	0.3793 2.507	0.4026 2.508
0.5307 2.515	0.5532 2.505	0.5754 2.502	0.3799 2.511	0.4036 2.513
0.5311 2.502	0.5536 2.498	0.5757 2.505	0.3806 2.510	0.4040 2.521
0.5318 2.505	0.5541 2.500	0.5761 2.515	0.3816 2.514	0.4043 2.507
0.5322 2.503	0.5547 2.507	0.5765 2.502	0.3820 2.507	0.4047 2.501
0.5326 2.509	0.5551 2.501	0.5769 2.490	0.3824 2.512	0.4051 2.503
0.5334 2.505	0.5555 2.511	0.5773 2.502	0.3831 2.510	0.4055 2.492
0.5338 2.500	0.5563 2.500	0.5777 2.496	0.3840 2.499	0.4059 2.505
0.5341 2.514	0.5566 2.499	0.5781 2.504	0.3844 2.501	0.4066 2.505
0.5345 2.507	0.5572 2.504	0.5784 2.508	0.3852 2.507	0.4074 2.514
0.5349 2.512	0.5578 2.502	0.5790 2.497	0.3855 2.514	0.4078 2.509
0.5355 2.509	0.5582 2.504	0.5796 2.507	0.3859 2.502	0.4082 2.509
0.5361 2.512	0.5587 2.490	0.5802 2.504	0.3863 2.524	0.4085 2.506
0.5364 2.511	0.5593 2.484	0.5809 2.509	0.3867 2.510	0.4089 2.499
0.5368 2.497	0.5597 2.496	2453826+	0.3875 2.507	0.4093 2.506
0.5372 2.482	0.5601 2.506	0.3644 2.502	0.3878 2.517	0.4097 2.510
0.5378 2.500	0.5605 2.508	0.3648 2.505	0.3882 2.505	0.4101 2.504
0.5384 2.495	0.5612 2.511	0.3651 2.490	0.3886 2.501	0.4105 2.503
0.5391 2.503	0.5616 2.510	0.3655 2.509	0.3890 2.511	0.4108 2.502
0.5395 2.499	0.5627 2.496	0.3661 2.515	0.3894 2.506	0.4112 2.510
0.5401 2.504	0.5633 2.503	0.3667 2.483	0.3898 2.507	0.4116 2.508
0.5407 2.516	0.5638 2.511	0.3671 2.508	0.3901 2.505	0.4120 2.524
0.5410 2.510	0.5642 2.509	0.3674 2.518	0.3907 2.511	0.4128 2.520
0.5414 2.502	0.5646 2.502	0.3678 2.507	0.3913 2.510	0.4131 2.515
0.5428 2.501	0.5650 2.504	0.3684 2.506	0.3917 2.516	0.4135 2.514
0.5434 2.510	0.5654 2.506	0.3690 2.505	0.3921 2.508	0.4141 2.518
0.5440 2.507	0.5658 2.503	0.3694 2.501	0.3924 2.498	0.4153 2.518
0.5446 2.498	0.5661 2.515	0.3697 2.507	0.3928 2.488	0.4158 2.524
0.5451 2.500	0.5665 2.516	0.3705 2.500	0.3932 2.498	0.4162 2.516
0.5455 2.503	0.5669 2.497	0.3709 2.506	0.3936 2.505	0.4166 2.513
0.5459 2.514	0.5673 2.515	0.3713 2.506	0.3940 2.502	0.4172 2.511
0.5464 2.510	0.5677 2.510	0.3717 2.500	0.3943 2.500	0.4177 2.526
0.5470 2.513	0.5682 2.507	0.3720 2.505	0.3947 2.503	0.4181 2.519
0.5474 2.508	0.5688 2.515	0.3724 2.508	0.3951 2.505	0.4185 2.511
0.5478 2.495	0.5692 2.506	0.3732 2.508	0.3955 2.512	0.4189 2.528
0.5482 2.493	0.5698 2.514	0.3736 2.501	0.3959 2.508	0.4193 2.520
0.5486 2.508	0.5704 2.505	0.3739 2.503	0.3963 2.516	0.4197 2.525
0.5490 2.497	0.5708 2.506	0.3743 2.508	0.3969 2.503	0.4202 2.516

0.4208 2.516	0.4424 2.508	0.4634 2.515	0.4861 2.511	0.5064 2.518
0.4216 2.517	0.4428 2.520	0.4637 2.515	0.4865 2.508	0.5068 2.516
0.4219 2.520	0.4432 2.514	0.4641 2.510	0.4869 2.517	0.5072 2.505
0.4223 2.512	0.4440 2.517	0.4645 2.512	0.4873 2.502	0.5076 2.507
0.4227 2.512	0.4443 2.509	0.4649 2.515	0.4877 2.504	0.5080 2.511
0.4234 2.522	0.4447 2.505	0.4653 2.506	0.4880 2.514	0.5083 2.509
0.4238 2.521	0.4453 2.520	0.4658 2.507	0.4884 2.512	0.5087 2.515
0.4242 2.514	0.4460 2.511	0.4666 2.511	0.4888 2.513	0.5091 2.505
0.4245 2.526	0.4466 2.512	0.4672 2.507	0.4892 2.509	0.5095 2.510
0.4249 2.517	0.4470 2.513	0.4676 2.509	0.4897 2.503	0.5099 2.512
0.4253 2.518	0.4474 2.518	0.4680 2.514	0.4905 2.505	0.5102 2.507
0.4257 2.517	0.4478 2.508	0.4683 2.511	0.4911 2.508	0.5106 2.513
0.4263 2.517	0.4482 2.514	0.4687 2.507	0.4915 2.510	0.5110 2.518
0.4268 2.515	0.4486 2.532	0.4691 2.511	0.4919 2.506	0.5114 2.510
0.4272 2.514	0.4489 2.507	0.4695 2.515	0.4923 2.510	0.5118 2.508
0.4278 2.520	0.4493 2.513	0.4703 2.503	0.4926 2.508	0.5122 2.520
0.4284 2.512	0.4497 2.523	0.4706 2.508	0.4930 2.513	0.5125 2.522
0.4288 2.520	0.4503 2.517	0.4710 2.500	0.4934 2.506	0.5129 2.514
0.4291 2.514	0.4509 2.511	0.4714 2.510	0.4938 2.510	0.5133 2.515
0.4297 2.518	0.4512 2.519	0.4718 2.505	0.4942 2.506	0.5137 2.507
0.4305 2.511	0.4516 2.513	0.4724 2.507	0.4946 2.501	0.5141 2.509
0.4311 2.518	0.4520 2.514	0.4729 2.511	0.4949 2.511	0.5145 2.513
0.4314 2.509	0.4524 2.513	0.4733 2.513	0.4953 2.503	0.5148 2.511
0.4318 2.524	0.4528 2.518	0.4737 2.510	0.4957 2.509	0.5152 2.513
0.4324 2.516	0.4531 2.513	0.4742 2.515	0.4961 2.505	0.5160 2.513
0.4330 2.516	0.4535 2.507	0.4749 2.508	0.4965 2.509	0.5164 2.509
0.4335 2.516	0.4539 2.507	0.4755 2.507	0.4968 2.506	0.5168 2.511
0.4341 2.513	0.4543 2.511	0.4762 2.505	0.4972 2.507	0.5171 2.514
0.4345 2.512	0.4547 2.518	0.4768 2.511	0.4976 2.505	0.5175 2.507
0.4349 2.507	0.4553 2.506	0.4772 2.514	0.4984 2.510	0.5179 2.511
0.4353 2.514	0.4558 2.515	0.4775 2.517	0.4991 2.511	0.5185 2.511
0.4356 2.508	0.4562 2.509	0.4779 2.511	0.4995 2.509	0.5191 2.510
0.4360 2.510	0.4566 2.506	0.4783 2.507	0.4999 2.513	0.5194 2.515
0.4364 2.515	0.4570 2.511	0.4789 2.515	0.5003 2.504	0.5198 2.515
0.4368 2.512	0.4574 2.508	0.4794 2.514	0.5007 2.504	0.5202 2.512
0.4372 2.515	0.4577 2.513	0.4798 2.508	0.5011 2.513	0.5206 2.515
0.4376 2.513	0.4581 2.519	0.4804 2.511	0.5020 2.509	0.5216 2.508
0.4379 2.506	0.4585 2.515	0.4810 2.508	0.5026 2.507	0.5220 2.510
0.4383 2.509	0.4589 2.510	0.4822 2.501	0.5030 2.516	0.5224 2.513
0.4387 2.504	0.4593 2.511	0.4827 2.503	0.5034 2.512	0.5227 2.516
0.4391 2.514	0.4597 2.512	0.4831 2.505	0.5037 2.510	0.5231 2.507
0.4395 2.504	0.4602 2.509	0.4836 2.507	0.5041 2.508	0.5235 2.519
0.4399 2.512	0.4608 2.508	0.4842 2.514	0.5045 2.514	0.5239 2.517
0.4402 2.508	0.4612 2.504	0.4846 2.499	0.5049 2.509	0.5245 2.518
0.4406 2.508	0.4622 2.516	0.4850 2.513	0.5053 2.516	0.5250 2.518
0.4410 2.527	0.4626 2.513	0.4854 2.506	0.5057 2.505	0.5258 2.504
0.4416 2.518	0.4630 2.517	0.4857 2.507	0.5060 2.507	0.5262 2.499

0.5267 2.515	0.5478 2.505	0.5692 2.523	0.5924 2.533	0.6158 2.530
0.5273 2.511	0.5484 2.514	0.5696 2.522	0.5928 2.536	0.6162 2.530
0.5277 2.501	0.5487 2.497	0.5700 2.507	0.5931 2.530	0.6166 2.536
0.5281 2.509	0.5491 2.504	0.5704 2.523	0.5935 2.543	0.6169 2.535
0.5285 2.506	0.5495 2.517	0.5707 2.514	0.5939 2.536	0.6173 2.529
0.5291 2.505	0.5499 2.505	0.5713 2.526	0.5945 2.535	0.6177 2.534
0.5296 2.501	0.5503 2.505	0.5724 2.530	0.5952 2.543	0.6181 2.532
0.5300 2.502	0.5507 2.515	0.5730 2.515	0.5958 2.540	0.6185 2.539
0.5304 2.511	0.5511 2.506	0.5736 2.524	0.5962 2.547	0.6189 2.528
0.5308 2.498	0.5516 2.517	0.5742 2.529	0.5966 2.547	0.6192 2.530
0.5312 2.493	0.5522 2.509	0.5746 2.518	0.5970 2.549	0.6203 2.513
0.5316 2.508	0.5526 2.519	0.5751 2.520	0.5973 2.538	0.6209 2.494
0.5319 2.515	0.5530 2.516	0.5759 2.526	0.5977 2.541	0.6213 2.513
0.5323 2.509	0.5533 2.512	0.5765 2.513	0.5981 2.534	0.6217 2.513
0.5327 2.508	0.5537 2.519	0.5770 2.516	0.5985 2.529	0.6221 2.514
0.5331 2.503	0.5541 2.508	0.5776 2.528	0.5991 2.527	0.6227 2.509
0.5335 2.503	0.5545 2.512	0.5780 2.522	0.5996 2.515	0.6232 2.508
0.5339 2.501	0.5549 2.507	0.5786 2.522	0.6005 2.542	0.6236 2.505
0.5342 2.494	0.5553 2.518	0.5793 2.520	0.6009 2.537	0.6241 2.501
0.5346 2.502	0.5556 2.511	0.5799 2.527	0.6012 2.541	0.6248 2.510
0.5350 2.510	0.5560 2.511	0.5809 2.529	0.6016 2.540	0.6251 2.516
0.5354 2.504	0.5564 2.516	0.5813 2.528	0.6030 2.540	0.6255 2.510
0.5358 2.505	0.5568 2.503	0.5816 2.530	0.6035 2.533	0.6259 2.512
0.5364 2.510	0.5576 2.511	0.5820 2.526	0.6039 2.554	0.6263 2.519
0.5369 2.502	0.5581 2.510	0.5824 2.532	0.6043 2.553	0.6267 2.515
0.5373 2.510	0.5587 2.518	0.5828 2.527	0.6057 2.546	0.6270 2.515
0.5377 2.502	0.5591 2.512	0.5832 2.533	0.6066 2.539	0.6274 2.515
0.5381 2.502	0.5595 2.513	0.5836 2.531	0.6070 2.539	0.6278 2.507
0.5384 2.507	0.5601 2.516	0.5841 2.525	0.6074 2.546	0.6282 2.517
0.5388 2.498	0.5612 2.512	0.5847 2.532	0.6078 2.542	0.6286 2.516
0.5392 2.515	0.5615 2.505	0.5851 2.531	0.6081 2.539	0.6290 2.527
0.5396 2.508	0.5619 2.512	0.5855 2.520	0.6085 2.540	0.6293 2.518
0.5400 2.506	0.5623 2.512	0.5859 2.513	0.6089 2.530	0.6300 2.510
0.5409 2.515	0.5627 2.520	0.5863 2.523	0.6101 2.533	0.6308 2.513
0.5419 2.512	0.5631 2.517	0.5866 2.522	0.6104 2.535	0.6312 2.519
0.5422 2.514	0.5637 2.513	0.5870 2.527	0.6108 2.551	0.6315 2.519
0.5426 2.503	0.5642 2.511	0.5874 2.540	0.6112 2.542	0.6319 2.513
0.5430 2.507	0.5646 2.530	0.5878 2.534	0.6116 2.540	0.6323 2.527
0.5434 2.496	0.5650 2.514	0.5882 2.533	0.6120 2.534	0.6327 2.517
0.5438 2.504	0.5654 2.513	0.5887 2.533	0.6123 2.539	0.6331 2.531
0.5443 2.515	0.5659 2.506	0.5893 2.533	0.6127 2.540	0.6337 2.512
0.5449 2.513	0.5667 2.510	0.5897 2.529	0.6131 2.530	0.6342 2.504
0.5453 2.512	0.5673 2.506	0.5901 2.533	0.6135 2.531	0.6346 2.505
0.5457 2.510	0.5677 2.519	0.5905 2.523	0.6141 2.528	0.6350 2.516
0.5461 2.511	0.5681 2.519	0.5908 2.528	0.6146 2.522	0.6354 2.516
0.5465 2.505	0.5684 2.515	0.5914 2.524	0.6150 2.537	0.6357 2.514
0.5468 2.513	0.5688 2.515	0.5920 2.527	0.6154 2.534	0.6361 2.521

0.6365 2.512	0.3085 2.503	0.3546 2.497	0.3908 2.507	0.4594 2.503
0.6369 2.513	0.3089 2.503	0.3550 2.502	0.3913 2.503	0.4600 2.495
0.6373 2.529	0.3094 2.508	0.3557 2.503	0.3918 2.498	0.4607 2.506
0.6377 2.521	0.3098 2.507	0.3564 2.500	0.3922 2.501	0.4614 2.505
0.6382 2.514	0.3103 2.508	0.3568 2.499	0.3929 2.505	0.4618 2.502
0.6388 2.531	0.3108 2.503	0.3573 2.508	0.3936 2.504	0.4623 2.503
0.6392 2.533	0.3115 2.505	0.3577 2.501	0.3940 2.507	0.4627 2.507
0.6396 2.535	0.3120 2.500	0.3582 2.508	0.3945 2.501	0.4632 2.507
2453828 +	0.3124 2.513	0.3586 2.500	0.3949 2.501	0.4636 2.496
0.2878 2.497	0.3280 2.499	0.3593 2.507	0.3954 2.508	0.4646 2.498
0.2883 2.507	0.3290 2.509	0.3600 2.500	0.3961 2.503	0.4653 2.503
0.2889 2.513	0.3296 2.499	0.3607 2.501	0.3968 2.501	0.4658 2.503
0.2893 2.514	0.3301 2.511	0.3613 2.510	0.3975 2.504	0.4662 2.503
0.2898 2.506	0.3307 2.503	0.3618 2.506	0.3981 2.502	0.4667 2.501
0.2902 2.508	0.3314 2.488	0.3622 2.510	0.3986 2.508	0.4671 2.502
0.2907 2.510	0.3319 2.501	0.3630 2.510	0.3990 2.506	0.4676 2.511
0.2911 2.507	0.3327 2.503	0.3644 2.485	0.4005 2.504	0.4683 2.509
0.2916 2.512	0.3336 2.509	0.3663 2.495	0.4015 2.503	0.4691 2.510
0.2921 2.508	0.3343 2.503	0.3668 2.504	0.4019 2.507	0.4698 2.503
0.2925 2.507	0.3350 2.504	0.3672 2.506	0.4028 2.498	0.4703 2.503
0.2930 2.506	0.3359 2.507	0.3677 2.499	0.4033 2.500	0.4707 2.507
0.2934 2.501	0.3366 2.504	0.3683 2.504	0.4037 2.498	0.4712 2.513
0.2939 2.505	0.3370 2.506	0.3688 2.492	0.4042 2.498	0.4719 2.507
0.2943 2.505	0.3375 2.516	0.3692 2.502	0.4046 2.505	0.4725 2.511
0.2948 2.508	0.3380 2.503	0.3697 2.501	0.4051 2.503	0.4730 2.509
0.2952 2.505	0.3384 2.514	0.3702 2.507	0.4492 2.516	0.4734 2.507
0.2959 2.501	0.3401 2.521	0.3706 2.504	0.4496 2.509	0.4739 2.507
0.2966 2.509	0.3411 2.503	0.3711 2.502	0.4501 2.509	0.4743 2.507
0.2970 2.503	0.3419 2.501	0.3715 2.500	0.4505 2.513	0.4750 2.510
0.2975 2.505	0.3426 2.504	0.3720 2.500	0.4510 2.504	0.4757 2.509
0.2979 2.505	0.3433 2.503	0.3727 2.498	0.4514 2.504	0.4761 2.510
0.2984 2.519	0.3442 2.501	0.3733 2.481	0.4519 2.512	0.4766 2.511
0.2988 2.509	0.3449 2.507	0.3747 2.502	0.4523 2.513	0.4771 2.508
0.3005 2.498	0.3469 2.509	0.3751 2.498	0.4528 2.514	0.4775 2.516
0.3009 2.508	0.3475 2.498	0.3756 2.501	0.4532 2.507	0.4780 2.511
0.3016 2.510	0.3482 2.509	0.3852 2.506	0.4537 2.508	0.4784 2.505
0.3023 2.506	0.3487 2.504	0.3857 2.510	0.4541 2.509	0.4791 2.504
0.3033 2.506	0.3494 2.502	0.3861 2.501	0.4546 2.511	0.4798 2.504
0.3040 2.502	0.3500 2.498	0.3866 2.502	0.4550 2.514	0.4802 2.505
0.3044 2.508	0.3505 2.503	0.3870 2.501	0.4555 2.510	0.4807 2.508
0.3049 2.503	0.3509 2.503	0.3875 2.501	0.4559 2.505	0.4811 2.508
0.3055 2.506	0.3514 2.506	0.3880 2.506	0.4564 2.510	0.4823 2.502
0.3062 2.505	0.3518 2.500	0.3886 2.506	0.4569 2.504	0.4830 2.505
0.3067 2.508	0.3524 2.501	0.3890 2.512	0.4573 2.505	0.4834 2.503
0.3071 2.504	0.3532 2.503	0.3895 2.507	0.4578 2.502	0.4839 2.503
0.3076 2.508	0.3537 2.501	0.3899 2.510	0.4582 2.505	0.4843 2.500
0.3080 2.511	0.3541 2.505	0.3904 2.507	0.4587 2.507	0.4848 2.505

0.4852 2.508	0.3701 2.528	0.3952 2.518	0.4189 2.508	0.4440 2.510
0.4857 2.510	0.3710 2.526	0.3962 2.505	0.4197 2.518	0.4444 2.515
0.4861 2.503	0.3716 2.516	0.3966 2.513	0.4201 2.518	0.4447 2.508
0.4866 2.504	0.3720 2.524	0.3970 2.514	0.4205 2.510	0.4451 2.512
0.4870 2.505	0.3726 2.528	0.3973 2.513	0.4168 2.507	0.4455 2.504
0.4875 2.509	0.3732 2.525	0.3977 2.516	0.4216 2.509	0.4459 2.504
0.4879 2.504	0.3736 2.526	0.3981 2.515	0.4220 2.501	0.4463 2.506
0.4884 2.507	0.3739 2.516	0.3985 2.515	0.4224 2.506	0.4467 2.502
0.4888 2.512	0.3743 2.530	0.3989 2.503	0.4228 2.502	0.4471 2.510
0.4893 2.505	0.3749 2.522	0.3993 2.507	0.4233 2.500	0.4474 2.508
0.4897 2.505	0.3755 2.521	0.3996 2.512	0.4239 2.505	0.4478 2.518
0.4904 2.503	0.3759 2.518	0.4000 2.509	0.4243 2.509	0.4482 2.497
0.4911 2.503	0.3765 2.522	0.4006 2.510	0.4247 2.512	0.4488 2.510
0.4915 2.503	0.3770 2.520	0.4014 2.503	0.4251 2.506	0.4494 2.512
0.4920 2.510	0.3776 2.520	0.4020 2.504	0.4257 2.499	0.4498 2.515
0.4925 2.505	0.3782 2.516	0.4025 2.503	0.4262 2.511	0.4501 2.515
0.4929 2.503	0.3786 2.519	0.4031 2.514	0.4266 2.520	0.4505 2.503
0.4934 2.505	0.3790 2.524	0.4037 2.509	0.4272 2.510	0.4509 2.506
0.4940 2.506	0.3795 2.519	0.4043 2.501	0.4278 2.504	0.4515 2.505
0.4947 2.507	0.3803 2.516	0.4048 2.509	0.4282 2.514	0.4521 2.510
0.4952 2.501	0.3811 2.516	0.4054 2.506	0.4286 2.516	0.4526 2.510
2453830 +	0.3817 2.518	0.4058 2.504	0.4289 2.517	0.4532 2.508
0.3570 2.517	0.3820 2.524	0.4062 2.512	0.4293 2.518	0.4540 2.511
0.3574 2.528	0.3824 2.522	0.4066 2.505	0.4297 2.512	0.4548 2.508
0.3579 2.519	0.3828 2.519	0.4072 2.511	0.4301 2.511	0.4552 2.518
0.3587 2.520	0.3832 2.517	0.4080 2.509	0.4305 2.514	0.4555 2.514
0.3593 2.525	0.3836 2.520	0.4085 2.512	0.4309 2.510	0.4561 2.513
0.3597 2.522	0.3840 2.512	0.4089 2.510	0.4313 2.516	0.4567 2.517
0.3601 2.518	0.3845 2.518	0.4095 2.504	0.4316 2.519	0.4571 2.506
0.3610 2.515	0.3851 2.528	0.4101 2.508	0.4320 2.512	0.4575 2.507
0.3616 2.516	0.3855 2.522	0.4104 2.513	0.4326 2.506	0.4579 2.508
0.3622 2.522	0.3859 2.521	0.4108 2.516	0.4333 2.514	0.4582 2.515
0.3629 2.523	0.3863 2.519	0.4114 2.502	0.4341 2.502	0.4586 2.510
0.3635 2.529	0.3867 2.522	0.4122 2.507	0.4370 2.506	0.4592 2.509
0.3639 2.525	0.3873 2.520	0.4128 2.498	0.4374 2.505	0.4600 2.507
0.3645 2.517	0.3878 2.522	0.4131 2.503	0.4378 2.505	0.4608 2.514
0.3651 2.519	0.3882 2.516	0.4137 2.507	0.4382 2.511	0.4613 2.505
0.3657 2.521	0.3888 2.518	0.4143 2.511	0.4386 2.518	0.4617 2.514
0.3662 2.526	0.3895 2.511	0.4147 2.505	0.4390 2.511	0.4623 2.505
0.3666 2.516	0.3903 2.516	0.4151 2.510	0.4393 2.504	0.4631 2.510
0.3672 2.525	0.3909 2.515	0.4155 2.525	0.4397 2.510	0.4636 2.513
0.3678 2.520	0.3921 2.513	0.4160 2.519	0.4405 2.505	0.4640 2.519
0.3682 2.521	0.3925 2.512	0.4168 2.507	0.4413 2.510	0.4644 2.504
0.3685 2.533	0.3928 2.516	0.4174 2.517	0.4417 2.505	0.4648 2.513
0.3689 2.526	0.3934 2.518	0.4178 2.510	0.4420 2.511	0.4652 2.515
0.3693 2.525	0.3942 2.510	0.4182 2.509	0.4426 2.504	0.4658 2.517
0.3697 2.530	0.3948 2.509	0.4185 2.510	0.4434 2.508	0.4663 2.513

0.4669 2.512	0.4907 2.506	0.5153 2.527	0.5411 2.538	0.4092 2.516
0.4675 2.512	0.4911 2.512	0.5157 2.516	2453847 +	0.4096 2.515
0.4679 2.511	0.4917 2.505	0.5162 2.519	0.3846 2.512	0.4103 2.510
0.4683 2.516	0.4923 2.514	0.5175 2.522	0.3853 2.516	0.4110 2.513
0.4687 2.503	0.4929 2.513	0.5182 2.523	0.3862 2.513	0.4114 2.514
0.4692 2.508	0.4934 2.515	0.5188 2.523	0.3869 2.521	0.4119 2.511
0.4700 2.516	0.4938 2.516	0.5192 2.513	0.3876 2.520	0.4123 2.515
0.4706 2.516	0.4942 2.505	0.5199 2.522	0.3882 2.517	0.4128 2.515
0.4710 2.518	0.4946 2.513	0.5203 2.515	0.3887 2.515	0.4135 2.517
0.4714 2.511	0.4950 2.519	0.5207 2.530	0.3891 2.526	0.4142 2.518
0.4719 2.511	0.4956 2.504	0.5211 2.519	0.3896 2.521	0.4146 2.515
0.4725 2.509	0.4961 2.519	0.5215 2.517	0.3901 2.516	0.4151 2.515
0.4729 2.510	0.4965 2.506	0.5219 2.514	0.3907 2.523	0.4155 2.514
0.4735 2.500	0.4969 2.514	0.5222 2.514	0.3916 2.520	0.4162 2.519
0.4744 2.511	0.4975 2.512	0.5226 2.519	0.3923 2.519	0.4169 2.518
0.4761 2.513	0.4983 2.516	0.5235 2.521	0.3928 2.521	0.4173 2.518
0.4764 2.518	0.4988 2.503	0.5239 2.528	0.3932 2.524	0.4178 2.512
0.4768 2.510	0.4994 2.514	0.5242 2.519	0.3937 2.518	0.4182 2.518
0.4774 2.512	0.5000 2.523	0.5246 2.521	0.3942 2.517	0.4187 2.515
0.4780 2.519	0.5004 2.556	0.5252 2.520	0.3946 2.518	0.4192 2.512
0.4784 2.508	0.5010 2.503	0.5258 2.522	0.3951 2.517	0.4196 2.518
0.4789 2.516	0.5017 2.493	0.5262 2.520	0.3955 2.518	0.4201 2.519
0.4795 2.519	0.5027 2.517	0.5265 2.524	0.3962 2.517	0.4205 2.519
0.4799 2.514	0.5035 2.518	0.5269 2.522	0.3969 2.516	0.4210 2.521
0.4803 2.509	0.5039 2.508	0.5273 2.518	0.3973 2.523	0.4214 2.514
0.4807 2.513	0.5042 2.525	0.5277 2.523	0.3978 2.515	0.4219 2.518
0.4813 2.513	0.5046 2.518	0.5283 2.528	0.3982 2.519	0.4223 2.518
0.4818 2.514	0.5050 2.517	0.5289 2.523	0.3987 2.510	0.4228 2.517
0.4824 2.510	0.5054 2.523	0.5293 2.524	0.3992 2.521	0.4232 2.516
0.4832 2.516	0.5058 2.523	0.5296 2.533	0.3996 2.511	0.4237 2.520
0.4838 2.513	0.5062 2.513	0.5300 2.526	0.4001 2.510	0.4241 2.514
0.4842 2.507	0.5066 2.518	0.5304 2.523	0.4005 2.518	0.4246 2.517
0.4847 2.514	0.5071 2.520	0.5308 2.526	0.4010 2.517	0.4253 2.519
0.4853 2.510	0.5079 2.521	0.5312 2.524	0.4014 2.515	0.4260 2.528
0.4857 2.510	0.5087 2.520	0.5316 2.528	0.4019 2.520	0.4264 2.520
0.4861 2.511	0.5093 2.517	0.5320 2.517	0.4023 2.515	0.4269 2.512
0.4865 2.513	0.5096 2.522	0.5323 2.525	0.4028 2.513	0.4273 2.514
0.4869 2.512	0.5100 2.511	0.5327 2.532	0.4032 2.513	0.4278 2.520
0.4872 2.510	0.5104 2.525	0.5331 2.527	0.4039 2.515	0.4282 2.523
0.4876 2.507	0.5108 2.523	0.5335 2.533	0.4046 2.518	0.4287 2.525
0.4880 2.513	0.5114 2.520	0.5339 2.523	0.4051 2.513	0.4294 2.521
0.4884 2.509	0.5120 2.518	0.5343 2.530	0.4058 2.518	0.4303 2.519
0.4888 2.512	0.5125 2.517	0.5347 2.527	0.4064 2.510	0.4310 2.522
0.4892 2.511	0.5131 2.521	0.5373 2.530	0.4071 2.516	0.4314 2.521
0.4896 2.509	0.5135 2.512	0.5383 2.528	0.4078 2.513	0.4319 2.518
0.4899 2.510	0.5139 2.516	0.5390 2.529	0.4082 2.518	0.4323 2.523
0.4903 2.514	0.5143 2.520	0.5402 2.530	0.4087 2.512	0.4328 2.522

0.4332 2.515	0.4578 2.520	0.4811 2.521	0.5047 2.523	0.5306 2.519
0.4337 2.515	0.4582 2.518	0.4815 2.520	0.5054 2.522	0.5311 2.521
0.4343 2.519	0.4587 2.521	0.4820 2.519	0.5061 2.522	0.5315 2.520
0.4350 2.518	0.4591 2.514	0.4827 2.516	0.5065 2.525	0.5320 2.519
0.4355 2.521	0.4596 2.521	0.4836 2.517	0.5070 2.522	0.5324 2.528
0.4360 2.523	0.4600 2.523	0.4843 2.521	0.5077 2.526	0.5329 2.513
0.4364 2.523	0.4607 2.520	0.4848 2.522	0.5084 2.525	0.5334 2.525
0.4371 2.521	0.4615 2.516	0.4852 2.521	0.5090 2.520	0.5338 2.520
0.4378 2.526	0.4620 2.521	0.4856 2.524	0.5097 2.521	0.5343 2.525
0.4382 2.519	0.4624 2.518	0.4861 2.523	0.5102 2.524	0.5349 2.523
0.4389 2.525	0.4629 2.520	0.4865 2.520	0.5109 2.524	0.5356 2.515
0.4396 2.521	0.4634 2.517	0.4870 2.518	0.5115 2.523	0.5364 2.515
0.4403 2.521	0.4638 2.518	0.4875 2.517	0.5120 2.525	0.5368 2.514
0.4410 2.527	0.4643 2.518	0.4879 2.523	0.5124 2.527	0.5373 2.514
0.4414 2.515	0.4647 2.519	0.4884 2.530	0.5129 2.527	0.5377 2.515
0.4419 2.518	0.4655 2.517	0.4888 2.521	0.5134 2.523	0.5385 2.520
0.4425 2.526	0.4663 2.519	0.4893 2.523	0.5140 2.518	0.5391 2.524
0.4432 2.523	0.4670 2.520	0.4897 2.519	0.5150 2.521	0.5396 2.519
0.4439 2.527	0.4675 2.519	0.4902 2.524	0.5156 2.521	0.5400 2.519
0.4446 2.517	0.4679 2.518	0.4908 2.518	0.5161 2.521	0.5407 2.523
0.4453 2.518	0.4684 2.518	0.4915 2.514	0.5165 2.516	0.5414 2.520
0.4460 2.518	0.4688 2.518	0.4920 2.515	0.5170 2.521	0.5418 2.518
0.4464 2.516	0.4693 2.521	0.4927 2.516	0.5174 2.525	0.5423 2.518
0.4469 2.519	0.4697 2.515	0.4934 2.511	0.5179 2.518	0.5427 2.525
0.4473 2.510	0.4702 2.514	0.4938 2.519	0.5184 2.523	0.5432 2.529
0.4478 2.519	0.4708 2.520	0.4945 2.520	0.5188 2.526	0.5437 2.518
0.4482 2.515	0.4716 2.515	0.4952 2.522	0.5193 2.512	0.5441 2.518
0.4487 2.519	0.4720 2.519	0.4956 2.524	0.5197 2.518	0.5448 2.529
0.4491 2.516	0.4725 2.519	0.4961 2.517	0.5202 2.521	0.5455 2.515
0.4496 2.517	0.4729 2.522	0.4965 2.523	0.5206 2.517	0.5459 2.523
0.4500 2.515	0.4734 2.518	0.4970 2.523	0.5213 2.520	0.5464 2.518
0.4505 2.514	0.4738 2.516	0.4975 2.520	0.5220 2.516	0.5468 2.520
0.4510 2.520	0.4743 2.520	0.4979 2.522	0.5224 2.520	0.5473 2.516
0.4514 2.520	0.4747 2.517	0.4984 2.523	0.5229 2.515	0.5478 2.517
0.4519 2.520	0.4752 2.516	0.4988 2.521	0.5236 2.523	0.5482 2.525
0.4523 2.525	0.4756 2.519	0.4993 2.522	0.5243 2.522	0.5487 2.522
0.4528 2.518	0.4761 2.511	0.4997 2.519	0.5247 2.523	0.5491 2.524
0.4532 2.515	0.4765 2.519	0.5002 2.519	0.5254 2.519	0.5498 2.525
0.4537 2.519	0.4770 2.512	0.5006 2.524	0.5261 2.525	0.5505 2.522
0.4541 2.518	0.4775 2.513	0.5011 2.524	0.5265 2.518	0.5510 2.529
0.4546 2.519	0.4779 2.514	0.5015 2.523	0.5272 2.520	0.5514 2.524
0.4550 2.517	0.4784 2.520	0.5020 2.523	0.5279 2.518	0.5519 2.520
0.4555 2.517	0.4788 2.516	0.5024 2.525	0.5284 2.518	0.5526 2.523
0.4559 2.522	0.4793 2.518	0.5029 2.527	0.5288 2.523	0.5532 2.527
0.4564 2.524	0.4797 2.516	0.5034 2.521	0.5293 2.525	0.5537 2.525
0.4569 2.525	0.4802 2.517	0.5038 2.526	0.5297 2.520	0.5541 2.517
0.4573 2.523	0.4806 2.521	0.5043 2.523	0.5302 2.513	0.5546 2.520

0.5550 2.522	0.5806 2.518	0.6080 2.520	0.3398 2.498	0.3604 2.499
0.5555 2.516	0.5810 2.525	0.6085 2.517	0.3401 2.493	0.3608 2.506
0.5560 2.520	0.5815 2.515	0.6089 2.509	0.3407 2.492	0.3612 2.501
0.5564 2.516	0.5820 2.516	0.6096 2.509	0.3413 2.491	0.3616 2.506
0.5569 2.518	0.5824 2.514	0.6103 2.519	0.3417 2.500	0.3619 2.508
0.5573 2.524	0.5831 2.524	0.6108 2.509	0.3420 2.495	0.3623 2.504
0.5578 2.524	0.5838 2.523	0.6115 2.510	0.3424 2.496	0.3627 2.498
0.5582 2.519	0.5831 2.524	2453848 +	0.3428 2.491	0.3631 2.501
0.5587 2.515	0.5852 2.515	0.3211 2.501	0.3434 2.492	0.3635 2.502
0.5594 2.522	0.5856 2.521	0.3215 2.505	0.3440 2.493	0.3639 2.492
0.5603 2.522	0.5861 2.515	0.3223 2.507	0.3443 2.497	0.3646 2.503
0.5610 2.529	0.5865 2.519	0.3229 2.504	0.3447 2.495	0.3652 2.500
0.5614 2.527	0.5870 2.514	0.3234 2.501	0.3451 2.499	0.3660 2.500
0.5619 2.520	0.5876 2.522	0.3240 2.510	0.3457 2.492	0.3665 2.501
0.5623 2.525	0.5884 2.512	0.3247 2.500	0.3463 2.504	0.3669 2.498
0.5628 2.512	0.5891 2.520	0.3252 2.503	0.3466 2.499	0.3673 2.500
0.5633 2.520	0.5897 2.513	0.3256 2.504	0.3470 2.507	0.3679 2.497
0.5640 2.519	0.5902 2.516	0.3263 2.505	0.3474 2.507	0.3685 2.503
0.5646 2.520	0.5906 2.520	0.3270 2.511	0.3480 2.504	0.3688 2.495
0.5651 2.520	0.5911 2.523	0.3274 2.505	0.3486 2.503	0.3692 2.493
0.5655 2.516	0.5916 2.521	0.3279 2.509	0.3489 2.503	0.3698 2.497
0.5660 2.519	0.5920 2.518	0.3284 2.504	0.3493 2.502	0.3704 2.493
0.5664 2.524	0.5925 2.526	0.3288 2.508	0.3497 2.505	0.3708 2.498
0.5671 2.515	0.5929 2.517	0.3298 2.502	0.3501 2.508	0.3711 2.498
0.5678 2.517	0.5934 2.520	0.3302 2.506	0.3505 2.507	0.3715 2.499
0.5683 2.519	0.5941 2.516	0.3306 2.508	0.3509 2.507	0.3719 2.502
0.5687 2.520	0.5948 2.518	0.3310 2.501	0.3512 2.505	0.3723 2.503
0.5694 2.522	0.5952 2.516	0.3313 2.493	0.3516 2.507	0.3727 2.499
0.5701 2.518	0.5957 2.514	0.3319 2.496	0.3522 2.508	0.3730 2.499
0.5708 2.516	0.5961 2.520	0.3325 2.498	0.3528 2.506	0.3734 2.494
0.5715 2.522	0.5968 2.515	0.3329 2.502	0.3531 2.511	0.3738 2.500
0.5719 2.523	0.5977 2.519	0.3333 2.505	0.3535 2.506	0.3742 2.495
0.5724 2.522	0.5984 2.515	0.3336 2.491	0.3539 2.508	0.3748 2.502
0.5728 2.526	0.5989 2.518	0.3340 2.498	0.3543 2.508	0.3753 2.502
0.5733 2.522	0.5995 2.515	0.3344 2.501	0.3547 2.507	0.3759 2.500
0.5742 2.517	0.6005 2.513	0.3348 2.498	0.3551 2.503	0.3765 2.497
0.5747 2.525	0.6018 2.522	0.3352 2.499	0.3554 2.509	0.3769 2.500
0.5751 2.520	0.6028 2.516	0.3355 2.505	0.3558 2.505	0.3773 2.500
0.5756 2.524	0.6034 2.512	0.3359 2.500	0.3562 2.502	0.3776 2.503
0.5760 2.520	0.6039 2.520	0.3363 2.500	0.3566 2.504	0.3782 2.502
0.5767 2.523	0.6044 2.520	0.3367 2.498	0.3572 2.503	0.3788 2.499
0.5774 2.520	0.6048 2.513	0.3371 2.498	0.3577 2.502	0.3792 2.504
0.5778 2.526	0.6055 2.509	0.3375 2.500	0.3581 2.505	0.3798 2.499
0.5783 2.531	0.6062 2.498	0.3378 2.502	0.3585 2.499	0.3803 2.497
0.5788 2.528	0.6066 2.489	0.3382 2.502	0.3591 2.502	0.3809 2.498
0.5795 2.522	0.6071 2.506	0.3388 2.497	0.3597 2.501	0.3815 2.498
0.5801 2.529	0.6076 2.508	0.3394 2.499	0.3600 2.500	0.3818 2.495

0.3822 2.493	0.4046 2.495	0.4262 2.502	0.4496 2.503	0.4718 2.507
0.3826 2.496	0.4052 2.493	0.4268 2.505	0.4500 2.508	0.4722 2.512
0.3830 2.496	0.4056 2.494	0.4274 2.507	0.4504 2.511	0.4726 2.508
0.3834 2.499	0.4060 2.503	0.4278 2.506	0.4507 2.510	0.4731 2.515
0.3838 2.500	0.4063 2.496	0.4282 2.497	0.4511 2.505	0.4739 2.508
0.3841 2.500	0.4069 2.496	0.4285 2.508	0.4515 2.501	0.4745 2.507
0.3845 2.494	0.4075 2.497	0.4289 2.497	0.4525 2.505	0.4748 2.508
0.3851 2.498	0.4079 2.500	0.4293 2.504	0.4530 2.507	0.4752 2.511
0.3857 2.499	0.4084 2.498	0.4299 2.501	0.4534 2.504	0.4756 2.509
0.3861 2.499	0.4090 2.494	0.4305 2.506	0.4540 2.505	0.4760 2.513
0.3866 2.499	0.4094 2.495	0.4308 2.500	0.4546 2.511	0.4764 2.506
0.3872 2.493	0.4098 2.496	0.4314 2.499	0.4551 2.510	0.4769 2.511
0.3876 2.499	0.4102 2.492	0.4320 2.498	0.4557 2.507	0.4775 2.516
0.3880 2.496	0.4108 2.503	0.4324 2.505	0.4561 2.509	0.4781 2.510
0.3883 2.501	0.4113 2.496	0.4327 2.501	0.4565 2.515	0.4787 2.515
0.3887 2.502	0.4117 2.502	0.4331 2.505	0.4570 2.512	0.4791 2.516
0.3891 2.504	0.4121 2.499	0.4335 2.500	0.4578 2.511	0.4794 2.511
0.3895 2.508	0.4127 2.500	0.4343 2.497	0.4584 2.507	0.4798 2.515
0.3899 2.503	0.4132 2.501	0.4347 2.499	0.4588 2.509	0.4802 2.504
0.3904 2.504	0.4136 2.506	0.4350 2.503	0.4592 2.509	0.4806 2.505
0.3910 2.496	0.4142 2.499	0.4354 2.503	0.4595 2.509	0.4810 2.505
0.3914 2.500	0.4148 2.502	0.4364 2.499	0.4599 2.513	0.4814 2.505
0.3918 2.504	0.4151 2.503	0.4371 2.500	0.4603 2.512	0.4817 2.504
0.3922 2.503	0.4155 2.499	0.4377 2.505	0.4607 2.504	0.4821 2.510
0.3926 2.501	0.4159 2.501	0.4383 2.502	0.4611 2.503	0.4825 2.508
0.3931 2.498	0.4163 2.501	0.4389 2.503	0.4615 2.513	0.4829 2.512
0.3937 2.505	0.4167 2.504	0.4393 2.503	0.4618 2.510	0.4835 2.509
0.3941 2.499	0.4171 2.506	0.4396 2.506	0.4624 2.509	0.4840 2.513
0.3949 2.501	0.4176 2.500	0.4400 2.503	0.4630 2.510	0.4844 2.512
0.3952 2.504	0.4184 2.500	0.4404 2.499	0.4634 2.511	0.4850 2.517
0.3956 2.502	0.4190 2.500	0.4408 2.503	0.4637 2.515	0.4856 2.509
0.3960 2.506	0.4194 2.503	0.4413 2.502	0.4644 2.512	0.4859 2.509
0.3968 2.500	0.4197 2.501	0.4421 2.502	0.4649 2.511	0.4863 2.509
0.3972 2.503	0.4201 2.499	0.4427 2.499	0.4655 2.516	0.4867 2.516
0.3975 2.507	0.4205 2.501	0.4431 2.499	0.4660 2.514	0.4871 2.517
0.3979 2.500	0.4209 2.506	0.4437 2.500	0.4664 2.516	0.4875 2.510
0.3985 2.500	0.4213 2.505	0.4442 2.501	0.4668 2.509	0.4879 2.516
0.3991 2.502	0.4216 2.509	0.4448 2.504	0.4672 2.512	0.4884 2.516
0.3994 2.502	0.4220 2.507	0.4454 2.504	0.4676 2.513	0.4890 2.511
0.3998 2.505	0.4224 2.504	0.4458 2.504	0.4680 2.509	0.4896 2.510
0.4002 2.502	0.4228 2.506	0.4461 2.502	0.4683 2.513	0.4902 2.509
0.4008 2.500	0.4232 2.502	0.4465 2.505	0.4689 2.514	0.4905 2.512
0.4016 2.497	0.4236 2.508	0.4471 2.503	0.4695 2.511	0.4909 2.515
0.4021 2.501	0.4239 2.501	0.4479 2.504	0.4699 2.508	0.4913 2.511
0.4031 2.499	0.4245 2.502	0.4484 2.508	0.4703 2.507	0.4917 2.514
0.4037 2.503	0.4253 2.504	0.4488 2.505	0.4706 2.511	0.4921 2.518
0.4040 2.504	0.4259 2.502	0.4492 2.501	0.4712 2.508	0.4925 2.515

0.4928 2.521	0.5145 2.518	0.5367 2.511	0.5657 2.506	0.5873 2.516
0.4932 2.515	0.5148 2.514	0.5409 2.517	0.5661 2.504	0.5879 2.514
0.4936 2.517	0.5152 2.513	0.5412 2.519	0.5665 2.504	0.5885 2.502
0.4940 2.519	0.5156 2.514	0.5416 2.516	0.5669 2.506	0.5891 2.508
0.4944 2.519	0.5160 2.512	0.5420 2.515	0.5674 2.513	0.5896 2.506
0.4947 2.518	0.5164 2.508	0.5483 2.510	0.5680 2.506	0.5902 2.507
0.4951 2.520	0.5168 2.514	0.5489 2.508	0.5686 2.509	0.5908 2.509
0.4955 2.514	0.5171 2.509	0.5493 2.510	0.5692 2.506	0.5912 2.508
0.4959 2.508	0.5175 2.516	0.5497 2.511	0.5696 2.510	0.5915 2.513
0.4963 2.512	0.5179 2.509	0.5500 2.513	0.5699 2.504	0.5919 2.512
0.4967 2.513	0.5183 2.513	0.5504 2.507	0.5703 2.503	0.5923 2.506
0.4970 2.522	0.5187 2.509	0.5510 2.513	0.5707 2.511	0.5927 2.511
0.4974 2.513	0.5190 2.515	0.5516 2.512	0.5711 2.501	0.5931 2.514
0.4978 2.515	0.5194 2.511	0.5520 2.517	0.5715 2.509	0.5936 2.511
0.4982 2.517	0.5198 2.508	0.5523 2.508	0.5720 2.508	0.5942 2.510
0.4986 2.518	0.5202 2.508	0.5527 2.514	0.5726 2.508	0.5946 2.505
0.4990 2.511	0.5206 2.512	0.5531 2.511	0.5730 2.504	0.5950 2.505
0.4993 2.512	0.5210 2.517	0.5535 2.515	0.5734 2.510	0.5954 2.500
0.4997 2.518	0.5213 2.513	0.5539 2.513	0.5738 2.504	0.5962 2.516
0.5026 2.519	0.5217 2.508	0.5544 2.512	0.5745 2.509	0.5965 2.509
0.5030 2.520	0.5221 2.516	0.5550 2.509	0.5749 2.508	0.5969 2.505
0.5034 2.518	0.5225 2.512	0.5554 2.505	0.5753 2.510	0.5973 2.511
0.5037 2.524	0.5229 2.519	0.5558 2.511	0.5761 2.515	0.5977 2.514
0.5041 2.513	0.5233 2.510	0.5563 2.511	0.5764 2.505	0.5984 2.511
0.5047 2.521	0.5236 2.511	0.5569 2.519	0.5768 2.518	0.5988 2.502
0.5053 2.516	0.5240 2.507	0.5573 2.507	0.5772 2.507	0.5992 2.509
0.5056 2.516	0.5244 2.514	0.5577 2.504	0.5776 2.503	0.5996 2.509
0.5060 2.516	0.5248 2.513	0.5581 2.512	0.5784 2.514	0.6000 2.508
0.5064 2.507	0.5252 2.505	0.5585 2.515	0.5787 2.513	0.6004 2.508
0.5068 2.513	0.5256 2.510	0.5588 2.514	0.5792 2.510	0.6007 2.497
0.5074 2.513	0.5259 2.509	0.5592 2.518	0.5797 2.508	0.6011 2.500
0.5080 2.510	0.5263 2.513	0.5596 2.512	0.5801 2.505	0.6017 2.502
0.5083 2.506	0.5267 2.510	0.5600 2.512	0.5804 2.506	0.6023 2.496
0.5091 2.517	0.5271 2.516	0.5604 2.505	0.5812 2.503	0.6027 2.494
0.5095 2.508	0.5275 2.520	0.5608 2.504	0.5816 2.510	0.6030 2.491
0.5099 2.513	0.5278 2.504	0.5611 2.498	0.5820 2.508	0.6034 2.506
0.5102 2.509	0.5290 2.510	0.5615 2.501	0.5824 2.502	0.6038 2.495
0.5106 2.507	0.5321 2.514	0.5619 2.500	0.5827 2.509	0.6042 2.491
0.5110 2.515	0.5324 2.509	0.5623 2.499	0.5831 2.512	0.6047 2.489
0.5114 2.514	0.5332 2.511	0.5627 2.512	0.5839 2.512	0.6057 2.491
0.5118 2.506	0.5336 2.522	0.5631 2.508	0.5843 2.510	0.6061 2.480
0.5122 2.507	0.5340 2.516	0.5634 2.507	0.5847 2.505	2453849 +
0.5125 2.510	0.5347 2.511	0.5638 2.513	0.5850 2.521	0.3164 2.511
0.5129 2.504	0.5351 2.514	0.5642 2.507	0.5854 2.521	0.3169 2.505
0.5133 2.513	0.5355 2.522	0.5646 2.512	0.5858 2.515	0.3174 2.502
0.5137 2.512	0.5359 2.504	0.5650 2.498	0.5862 2.509	0.3178 2.501
0.5141 2.512	0.5363 2.506	0.5653 2.505	0.5868 2.513	0.3183 2.505

0.3187 2.510	0.3423 2.510	0.3650 2.512	0.3894 2.517	0.4203 2.506
0.3192 2.508	0.3428 2.508	0.3654 2.512	0.3899 2.513	0.4210 2.509
0.3198 2.511	0.3432 2.508	0.3659 2.509	0.3903 2.511	0.4214 2.513
0.3205 2.509	0.3437 2.512	0.3663 2.514	0.3908 2.509	0.4221 2.509
0.3210 2.516	0.3441 2.510	0.3668 2.516	0.3912 2.515	0.4228 2.511
0.3214 2.507	0.3446 2.509	0.3672 2.510	0.3967 2.515	0.4232 2.514
0.3219 2.503	0.3450 2.511	0.3677 2.515	0.3974 2.511	0.4240 2.511
0.3224 2.517	0.3455 2.512	0.3684 2.507	0.3978 2.515	0.4246 2.514
0.3228 2.508	0.3459 2.508	0.3690 2.511	0.3983 2.513	0.4251 2.504
0.3233 2.505	0.3464 2.509	0.3695 2.514	0.3987 2.502	0.4255 2.505
0.3240 2.508	0.3468 2.510	0.3699 2.509	0.3992 2.510	0.4260 2.511
0.3246 2.515	0.3473 2.515	0.3704 2.510	0.3996 2.506	0.4264 2.510
0.3251 2.506	0.3477 2.519	0.3709 2.513	0.4001 2.504	0.4269 2.508
0.3255 2.511	0.3482 2.515	0.3713 2.507	0.4006 2.509	0.4273 2.507
0.3262 2.507	0.3486 2.517	0.3718 2.502	0.4010 2.502	0.4278 2.515
0.3269 2.501	0.3491 2.506	0.3722 2.505	0.4017 2.510	0.4282 2.511
0.3273 2.510	0.3497 2.512	0.3727 2.512	0.4026 2.510	0.4287 2.508
0.3278 2.503	0.3505 2.517	0.3734 2.517	0.4035 2.510	0.4291 2.506
0.3283 2.504	0.3509 2.512	0.3743 2.513	0.4042 2.507	0.4298 2.509
0.3287 2.508	0.3514 2.511	0.3749 2.521	0.4046 2.514	0.4305 2.512
0.3292 2.511	0.3518 2.514	0.3754 2.512	0.4051 2.509	0.4309 2.516
0.3296 2.507	0.3523 2.510	0.3758 2.517	0.4055 2.515	0.4314 2.516
0.3301 2.503	0.3527 2.511	0.3763 2.510	0.4060 2.508	0.4318 2.516
0.3305 2.509	0.3532 2.509	0.3767 2.505	0.4064 2.515	0.4323 2.512
0.3310 2.506	0.3536 2.508	0.3772 2.517	0.4069 2.510	0.4328 2.513
0.3314 2.499	0.3541 2.505	0.3776 2.510	0.4076 2.515	0.4332 2.509
0.3319 2.506	0.3545 2.515	0.3781 2.511	0.4083 2.508	0.4337 2.508
0.3323 2.510	0.3550 2.513	0.3788 2.515	0.4087 2.515	0.4343 2.512
0.3328 2.516	0.3557 2.508	0.3795 2.508	0.4094 2.513	0.4352 2.511
0.3335 2.504	0.3563 2.506	0.3799 2.513	0.4103 2.513	0.4359 2.504
0.3341 2.509	0.3568 2.512	0.3804 2.506	0.4110 2.511	0.4364 2.511
0.3348 2.503	0.3573 2.513	0.3810 2.518	0.4114 2.517	0.4368 2.509
0.3355 2.510	0.3577 2.511	0.3817 2.517	0.4119 2.512	0.4373 2.514
0.3360 2.506	0.3582 2.509	0.3822 2.512	0.4126 2.513	0.4377 2.510
0.3364 2.507	0.3586 2.509	0.3826 2.517	0.4132 2.514	0.4382 2.512
0.3369 2.511	0.3591 2.507	0.3831 2.512	0.4137 2.512	0.4386 2.510
0.3373 2.501	0.3595 2.510	0.3835 2.516	0.4142 2.516	0.4393 2.513
0.3378 2.509	0.3600 2.504	0.3840 2.517	0.4146 2.515	0.4400 2.522
0.3382 2.516	0.3604 2.512	0.3844 2.514	0.4153 2.516	0.4405 2.519
0.3387 2.514	0.3609 2.507	0.3849 2.519	0.4160 2.510	0.4409 2.514
0.3391 2.509	0.3613 2.508	0.3853 2.512	0.4164 2.515	0.4416 2.513
0.3396 2.515	0.3618 2.514	0.3858 2.514	0.4169 2.513	0.4423 2.527
0.3400 2.515	0.3622 2.512	0.3863 2.514	0.4176 2.510	0.4427 2.520
0.3405 2.514	0.3627 2.506	0.3867 2.513	0.4182 2.513	0.4432 2.513
0.3409 2.514	0.3634 2.511	0.3872 2.514	0.4187 2.518	0.4436 2.517
0.3414 2.512	0.3641 2.514	0.3878 2.513	0.4191 2.511	0.4441 2.515
0.3418 2.514	0.3645 2.507	0.3890 2.510	0.4196 2.511	0.4445 2.518

0.4450 2.514	0.5002 2.519	0.5251 2.514	0.5503 2.514	0.5788 2.508
0.4454 2.513	0.5007 2.512	0.5256 2.509	0.5511 2.516	0.5792 2.511
0.4461 2.516	0.5011 2.508	0.5260 2.508	0.5519 2.514	0.5799 2.507
0.4468 2.508	0.5016 2.513	0.5265 2.509	0.5523 2.511	0.5806 2.508
0.4475 2.515	0.5020 2.510	0.5269 2.515	0.5528 2.513	0.5810 2.508
0.4482 2.518	0.5025 2.512	0.5274 2.514	0.5532 2.514	0.5815 2.510
0.4486 2.516	0.5029 2.514	0.5281 2.513	0.5537 2.509	0.5819 2.511
0.4491 2.514	0.5034 2.517	0.5288 2.513	0.5541 2.515	0.5824 2.516
0.4495 2.514	0.5038 2.517	0.5292 2.511	0.5546 2.519	0.5829 2.512
0.4500 2.517	0.5043 2.516	0.5297 2.511	0.5550 2.511	0.5833 2.516
0.4507 2.513	0.5047 2.511	0.5301 2.516	0.5555 2.508	0.5838 2.514
0.4810 2.515	0.5052 2.512	0.5306 2.516	0.5560 2.507	0.5842 2.509
0.4815 2.511	0.5056 2.516	0.5310 2.511	0.5566 2.513	0.5847 2.512
0.4822 2.518	0.5061 2.511	0.5317 2.515	0.5573 2.508	0.5851 2.510
0.4830 2.515	0.5065 2.517	0.5324 2.515	0.5578 2.514	0.5856 2.513
0.4837 2.518	0.5070 2.515	0.5328 2.515	0.5585 2.514	0.5860 2.511
0.4842 2.508	0.5075 2.509	0.5333 2.519	0.5591 2.514	0.5865 2.516
0.4850 2.515	0.5079 2.512	0.5337 2.518	0.5596 2.510	0.5870 2.507
0.4857 2.507	0.5084 2.511	0.5342 2.515	0.5602 2.514	0.5877 2.511
0.4862 2.513	0.5088 2.504	0.5346 2.520	0.5610 2.511	0.5885 2.514
0.4866 2.508	0.5093 2.516	0.5353 2.513	0.5615 2.517	0.5891 2.514
0.4871 2.510	0.5097 2.505	0.5360 2.513	0.5619 2.518	0.5898 2.508
0.4875 2.507	0.5102 2.508	0.5365 2.505	0.5628 2.515	0.5903 2.516
0.4880 2.508	0.5109 2.508	0.5369 2.512	0.5633 2.518	0.5907 2.518
0.4884 2.505	0.5115 2.514	0.5374 2.513	0.5638 2.519	0.5914 2.516
0.4891 2.513	0.5120 2.515	0.5383 2.514	0.5642 2.519	0.5921 2.515
0.4898 2.513	0.5109 2.508	0.5387 2.512	0.5649 2.516	0.5926 2.522
0.4902 2.508	0.5133 2.512	0.5392 2.510	0.5658 2.515	0.5933 2.512
0.4907 2.507	0.5140 2.511	0.5401 2.507	0.5665 2.520	0.5939 2.517
0.4911 2.510	0.5147 2.511	0.5405 2.511	0.5669 2.514	0.5944 2.517
0.4916 2.510	0.5152 2.510	0.5410 2.508	0.5676 2.510	0.5948 2.519
0.4921 2.506	0.5159 2.513	0.5414 2.507	0.5685 2.510	0.5953 2.515
0.4925 2.506	0.5165 2.507	0.5419 2.512	0.5692 2.511	0.5958 2.512
0.4930 2.507	0.5170 2.511	0.5423 2.510	0.5697 2.510	0.5964 2.516
0.4934 2.505	0.5174 2.514	0.5428 2.516	0.5703 2.512	0.5971 2.509
0.4939 2.509	0.5179 2.512	0.5435 2.516	0.5713 2.513	0.5976 2.510
0.4943 2.511	0.5186 2.511	0.5442 2.513	0.5719 2.507	0.5980 2.513
0.4948 2.509	0.5192 2.507	0.5446 2.508	0.5726 2.508	0.5985 2.514
0.4952 2.514	0.5197 2.506	0.5451 2.515	0.5733 2.502	0.5990 2.515
0.4957 2.512	0.5204 2.509	0.5458 2.510	0.5738 2.505	0.5999 2.503
0.4961 2.511	0.5210 2.512	0.5464 2.519	0.5742 2.514	0.6003 2.511
0.4966 2.510	0.5215 2.512	0.5469 2.507	0.5749 2.513	0.6010 2.509
0.4970 2.507	0.5222 2.511	0.5476 2.512	0.5756 2.513	0.6017 2.511
0.4984 2.514	0.5229 2.507	0.5482 2.510	0.5763 2.504	0.6022 2.506
0.4988 2.516	0.5236 2.513	0.5487 2.515	0.5769 2.509	2453850 +
0.4993 2.512	0.5242 2.506	0.5492 2.511	0.5774 2.511	0.3798 2.507
0.4998 2.518	0.5247 2.508	0.5496 2.508	0.5781 2.512	0.3803 2.508

0.3810 2.507	0.4084 2.507	0.4347 2.512	0.4612 2.513	0.4868 2.520
0.3816 2.509	0.4088 2.511	0.4351 2.509	0.4618 2.509	0.4874 2.514
0.3821 2.507	0.4095 2.509	0.4356 2.509	0.4623 2.516	0.4881 2.515
0.3828 2.510	0.4102 2.508	0.4360 2.508	0.4627 2.512	0.4886 2.516
0.3834 2.506	0.4106 2.505	0.4366 2.511	0.4632 2.514	0.4893 2.515
0.3839 2.507	0.4111 2.508	0.4374 2.513	0.4639 2.513	0.4899 2.513
0.3846 2.508	0.4115 2.511	0.4378 2.509	0.4646 2.515	0.4904 2.515
0.3855 2.506	0.4120 2.514	0.4383 2.510	0.4652 2.513	0.4908 2.515
0.3862 2.511	0.4124 2.509	0.4387 2.513	0.4659 2.514	0.4913 2.511
0.3868 2.510	0.4131 2.507	0.4392 2.510	0.4664 2.510	0.4917 2.516
0.3875 2.506	0.4138 2.511	0.4396 2.510	0.4670 2.512	0.4922 2.518
0.3880 2.506	0.4145 2.508	0.4401 2.512	0.4677 2.516	0.4926 2.515
0.3884 2.505	0.4152 2.511	0.4405 2.514	0.4682 2.512	0.4931 2.511
0.3891 2.508	0.4158 2.510	0.4414 2.512	0.4689 2.507	0.4938 2.518
0.3898 2.508	0.4165 2.509	0.4419 2.514	0.4695 2.516	0.4945 2.518
0.3907 2.508	0.4170 2.510	0.4428 2.515	0.4700 2.511	0.4951 2.516
0.3911 2.513	0.4174 2.511	0.4433 2.512	0.4704 2.513	0.4958 2.514
0.3916 2.509	0.4179 2.504	0.4437 2.516	0.4709 2.512	0.4963 2.515
0.3921 2.512	0.4183 2.512	0.4442 2.510	0.4713 2.513	0.4967 2.516
0.3925 2.507	0.4190 2.511	0.4446 2.508	0.4720 2.516	0.4972 2.516
0.3934 2.507	0.4197 2.509	0.4451 2.515	0.4727 2.519	0.4976 2.518
0.3939 2.507	0.4204 2.508	0.4455 2.512	0.4732 2.515	0.4984 2.515
0.3943 2.509	0.4211 2.507	0.4460 2.510	0.4736 2.512	0.4992 2.520
0.3948 2.510	0.4215 2.508	0.4464 2.509	0.4742 2.513	0.4996 2.510
0.3952 2.505	0.4220 2.513	0.4469 2.516	0.4750 2.513	0.5001 2.518
0.3957 2.509	0.4224 2.516	0.4476 2.512	0.4754 2.515	0.5005 2.519
0.3961 2.514	0.4231 2.513	0.4482 2.513	0.4759 2.516	0.5010 2.521
0.3966 2.512	0.4238 2.511	0.4489 2.512	0.4763 2.511	0.5014 2.515
0.3970 2.509	0.4244 2.507	0.4496 2.508	0.4768 2.510	0.5019 2.515
0.3975 2.507	0.4251 2.509	0.4503 2.512	0.4772 2.517	0.5023 2.518
0.3979 2.506	0.4256 2.511	0.4512 2.512	0.4777 2.511	0.5028 2.524
0.3986 2.508	0.4260 2.508	0.4519 2.511	0.4786 2.516	0.5032 2.516
0.3995 2.510	0.4265 2.507	0.4525 2.510	0.4795 2.519	0.5037 2.518
0.4002 2.511	0.4270 2.508	0.4532 2.508	0.4800 2.515	0.5041 2.516
0.4007 2.514	0.4244 2.507	0.4537 2.506	0.4804 2.515	0.5046 2.516
0.4014 2.515	0.4283 2.513	0.4541 2.508	0.4809 2.517	0.5050 2.513
0.4022 2.511	0.4288 2.511	0.4548 2.510	0.4813 2.513	0.5055 2.516
0.4031 2.511	0.4292 2.506	0.4555 2.508	0.4818 2.516	0.5059 2.516
0.4038 2.509	0.4297 2.513	0.4559 2.508	0.4822 2.519	0.5064 2.518
0.4043 2.504	0.4304 2.516	0.4564 2.510	0.4827 2.513	0.5069 2.515
0.4047 2.511	0.4310 2.509	0.4569 2.507	0.4836 2.508	0.5073 2.515
0.4054 2.506	0.4315 2.512	0.4573 2.513	0.4840 2.513	0.5078 2.516
0.4061 2.506	0.4321 2.507	0.4580 2.513	0.4845 2.513	0.5082 2.512
0.4066 2.506	0.4328 2.511	0.4587 2.510	0.4849 2.517	0.5087 2.515
0.4070 2.505	0.4333 2.509	0.4591 2.513	0.4854 2.517	0.5091 2.510
0.4075 2.504	0.4337 2.507	0.4596 2.509	0.4858 2.515	0.5096 2.515
0.4079 2.510	0.4342 2.512	0.4602 2.511	0.4863 2.518	0.5100 2.512

0.5105 2.514	0.5364 2.515	0.5616 2.518	0.5870 2.510	0.3457 2.513
0.5109 2.515	0.5371 2.508	0.5620 2.520	0.5874 2.516	0.3462 2.514
0.5114 2.515	0.5376 2.512	0.5625 2.515	0.5879 2.517	0.3466 2.510
0.5121 2.517	0.5380 2.512	0.5629 2.512	0.5888 2.514	0.3471 2.513
0.5129 2.515	0.5385 2.512	0.5634 2.514	0.5892 2.520	0.3475 2.511
0.5137 2.520	0.5389 2.516	0.5638 2.513	0.5897 2.520	0.3480 2.512
0.5141 2.518	0.5396 2.516	0.5643 2.518	0.5902 2.511	0.3484 2.509
0.5146 2.517	0.5403 2.512	0.5648 2.516	0.5906 2.517	0.3489 2.506
0.5150 2.510	0.5407 2.515	0.5652 2.511	0.5911 2.517	0.3493 2.509
0.5155 2.519	0.5412 2.520	0.5657 2.513	0.5915 2.521	0.3498 2.512
0.5159 2.516	0.5419 2.512	0.5661 2.513	0.5920 2.513	0.3502 2.508
0.5164 2.511	0.5425 2.511	0.5668 2.517	0.5927 2.519	0.3507 2.503
0.5168 2.510	0.5430 2.512	0.5677 2.516	0.5933 2.514	0.3511 2.502
0.5173 2.521	0.5435 2.513	0.5684 2.516	0.5938 2.514	0.3516 2.513
0.5177 2.521	0.5444 2.511	0.5688 2.512	0.5942 2.517	0.3520 2.511
0.5184 2.516	0.5448 2.513	0.5693 2.516	0.5949 2.516	0.3525 2.508
0.5193 2.515	0.5453 2.517	0.5697 2.514	0.5956 2.519	0.3530 2.507
0.5200 2.517	0.5457 2.517	0.5702 2.510	2453851 +	0.3534 2.513
0.5204 2.512	0.5462 2.516	0.5709 2.512	0.3321 2.516	0.3539 2.510
0.5209 2.520	0.5466 2.517	0.5716 2.517	0.3326 2.514	0.3543 2.513
0.5214 2.515	0.5471 2.516	0.5720 2.518	0.3330 2.512	0.3548 2.508
0.5218 2.517	0.5475 2.514	0.5729 2.521	0.3335 2.512	0.3552 2.512
0.5223 2.520	0.5480 2.515	0.5734 2.520	0.3339 2.515	0.3557 2.511
0.5227 2.518	0.5484 2.514	0.5741 2.521	0.3344 2.512	0.3561 2.506
0.5232 2.519	0.5489 2.517	0.5747 2.514	0.3348 2.515	0.3566 2.500
0.5236 2.521	0.5496 2.511	0.5752 2.517	0.3353 2.511	0.3570 2.507
0.5241 2.519	0.5503 2.513	0.5756 2.515	0.3357 2.513	0.3575 2.500
0.5245 2.517	0.5507 2.510	0.5761 2.512	0.3362 2.513	0.3579 2.507
0.5250 2.515	0.5512 2.510	0.5765 2.519	0.3366 2.501	0.3584 2.509
0.5254 2.515	0.5516 2.514	0.5770 2.515	0.3371 2.508	0.3588 2.507
0.5259 2.519	0.5522 2.516	0.5775 2.509	0.3375 2.507	0.3593 2.511
0.5263 2.516	0.5530 2.511	0.5779 2.517	0.3380 2.515	0.3597 2.510
0.5268 2.514	0.5534 2.512	0.5784 2.508	0.3385 2.506	0.3602 2.505
0.5275 2.520	0.5539 2.512	0.5790 2.513	0.3389 2.512	0.3607 2.506
0.5284 2.520	0.5543 2.513	0.5797 2.509	0.3394 2.508	0.3611 2.508
0.5291 2.517	0.5548 2.516	0.5802 2.513	0.3398 2.503	0.3616 2.506
0.5295 2.517	0.5554 2.521	0.5806 2.519	0.3403 2.509	0.3620 2.512
0.5300 2.520	0.5561 2.513	0.5813 2.516	0.3407 2.506	0.3625 2.512
0.5304 2.512	0.5566 2.521	0.5820 2.511	0.3412 2.514	0.3629 2.509
0.5326 2.516	0.5570 2.514	0.5824 2.511	0.3416 2.515	0.3634 2.513
0.5330 2.517	0.5575 2.515	0.5829 2.509	0.3425 2.505	0.3638 2.509
0.5335 2.517	0.5582 2.510	0.5833 2.512	0.3430 2.511	0.3643 2.509
0.5339 2.512	0.5589 2.515	0.5838 2.509	0.3434 2.507	0.3647 2.509
0.5344 2.518	0.5593 2.514	0.5845 2.512	0.3439 2.509	0.3652 2.504
0.5348 2.517	0.5598 2.512	0.5852 2.513	0.3443 2.508	0.3656 2.506
0.5353 2.515	0.5602 2.517	0.5856 2.513	0.3448 2.518	0.3661 2.514
0.5357 2.511	0.5609 2.516	0.5865 2.513	0.3452 2.509	0.3665 2.510

0.3670 2.508	0.4038 2.501	0.4251 2.511	0.4464 2.515	0.4677 2.513
0.3674 2.514	0.4043 2.514	0.4256 2.514	0.4469 2.523	0.4681 2.512
0.3679 2.507	0.4047 2.513	0.4260 2.513	0.4473 2.524	0.4686 2.521
0.3684 2.509	0.4052 2.513	0.4265 2.508	0.4478 2.522	0.4690 2.523
0.3688 2.513	0.4056 2.510	0.4269 2.510	0.4482 2.521	0.4695 2.526
0.3693 2.515	0.4061 2.514	0.4274 2.509	0.4487 2.519	0.4700 2.519
0.3697 2.508	0.4065 2.515	0.4278 2.509	0.4491 2.513	0.4704 2.522
0.3702 2.503	0.4070 2.515	0.4283 2.511	0.4496 2.528	0.4709 2.521
0.3706 2.510	0.4075 2.514	0.4287 2.515	0.4500 2.519	0.4713 2.518
0.3711 2.510	0.4079 2.513	0.4292 2.508	0.4505 2.519	0.4718 2.520
0.3715 2.505	0.4084 2.511	0.4296 2.513	0.4509 2.519	0.4722 2.521
0.3720 2.510	0.4088 2.514	0.4301 2.516	0.4514 2.521	0.4727 2.521
0.3724 2.506	0.4093 2.511	0.4306 2.511	0.4518 2.521	0.4731 2.524
0.3729 2.509	0.4097 2.510	0.4310 2.512	0.4523 2.517	0.4736 2.523
0.3733 2.508	0.4102 2.510	0.4315 2.510	0.4527 2.521	0.4740 2.517
0.3738 2.513	0.4106 2.509	0.4319 2.505	0.4532 2.518	0.4745 2.525
0.3742 2.506	0.4111 2.511	0.4324 2.513	0.4537 2.522	0.4749 2.531
0.3747 2.502	0.4115 2.508	0.4328 2.509	0.4541 2.519	0.4754 2.518
0.3751 2.506	0.4120 2.513	0.4333 2.515	0.4546 2.519	0.4758 2.519
0.3756 2.504	0.4124 2.512	0.4337 2.506	0.4550 2.518	0.4763 2.528
0.3760 2.508	0.4129 2.511	0.4342 2.507	0.4555 2.518	0.4767 2.519
0.3765 2.504	0.4133 2.512	0.4346 2.514	0.4559 2.521	0.4772 2.518
0.3770 2.500	0.4138 2.511	0.4351 2.512	0.4564 2.520	0.4777 2.526
0.3774 2.511	0.4142 2.509	0.4355 2.520	0.4568 2.517	0.4781 2.524
0.3779 2.511	0.4147 2.507	0.4360 2.516	0.4573 2.519	0.4786 2.524
0.3783 2.496	0.4152 2.506	0.4364 2.519	0.4577 2.519	0.4790 2.516
0.3788 2.489	0.4156 2.513	0.4369 2.517	0.4582 2.514	0.4795 2.522
0.3792 2.513	0.4161 2.512	0.4373 2.512	0.4586 2.521	0.4799 2.520
0.3797 2.501	0.4165 2.515	0.4378 2.521	0.4591 2.517	0.4804 2.513
0.3801 2.529	0.4170 2.511	0.4383 2.527	0.4595 2.521	0.4808 2.520
0.3806 2.518	0.4174 2.506	0.4387 2.513	0.4600 2.524	0.4813 2.523
0.3810 2.474	0.4179 2.510	0.4392 2.517	0.4604 2.519	0.4817 2.519
0.3815 2.509	0.4183 2.511	0.4396 2.513	0.4609 2.515	0.4822 2.516
0.3908 2.506	0.4188 2.510	0.4401 2.521	0.4613 2.526	0.4826 2.525
0.3913 2.508	0.4192 2.512	0.4405 2.515	0.4618 2.526	0.4831 2.519
0.3917 2.489	0.4197 2.506	0.4410 2.515	0.4622 2.519	0.4835 2.516
0.3922 2.495	0.4201 2.510	0.4414 2.514	0.4627 2.514	0.4840 2.516
0.3931 2.513	0.4206 2.504	0.4419 2.515	0.4632 2.545	0.4844 2.525
0.3937 2.501	0.4210 2.516	0.4423 2.520	0.4636 2.516	0.4849 2.518
0.3942 2.496	0.4215 2.514	0.4428 2.519	0.4641 2.515	0.4854 2.522
0.3986 2.514	0.4219 2.514	0.4432 2.523	0.4645 2.514	0.4858 2.525
0.4011 2.507	0.4224 2.512	0.4437 2.522	0.4650 2.516	0.4863 2.521
0.4016 2.533	0.4229 2.509	0.4441 2.522	0.4654 2.514	0.4867 2.521
0.4020 2.521	0.4233 2.512	0.4446 2.524	0.4659 2.519	0.4872 2.519
0.4025 2.510	0.4238 2.514	0.4450 2.519	0.4663 2.518	0.4876 2.521
0.4029 2.518	0.4242 2.509	0.4455 2.529	0.4668 2.520	0.4881 2.520
0.4034 2.515	0.4247 2.513	0.4460 2.516	0.4672 2.504	0.4885 2.522

0.4890 2.514	0.5103 2.522	0.5316 2.520	0.5529 2.517	0.5742 2.520
0.4894 2.521	0.5107 2.525	0.5320 2.517	0.5533 2.517	0.5746 2.517
0.4899 2.523	0.5112 2.518	0.5325 2.516	0.5538 2.509	0.5751 2.512
0.4903 2.522	0.5116 2.522	0.5329 2.517	0.5542 2.518	0.5755 2.515
0.4908 2.526	0.5121 2.523	0.5334 2.518	0.5547 2.515	0.5760 2.518
0.4912 2.524	0.5125 2.515	0.5338 2.512	0.5551 2.515	0.5764 2.511
0.4917 2.522	0.5130 2.518	0.5343 2.522	0.5556 2.519	0.5769 2.511
0.4921 2.519	0.5134 2.523	0.5347 2.511	0.5560 2.511	0.5774 2.508
0.4926 2.522	0.5139 2.528	0.5352 2.517	0.5565 2.517	0.5778 2.515
0.4931 2.520	0.5144 2.514	0.5356 2.518	0.5569 2.512	0.5783 2.520
0.4935 2.521	0.5148 2.521	0.5361 2.513	0.5574 2.511	0.5787 2.514
0.4940 2.518	0.5153 2.524	0.5366 2.518	0.5578 2.518	0.5792 2.520
0.4944 2.520	0.5157 2.515	0.5370 2.515	0.5583 2.517	0.5796 2.513
0.4949 2.518	0.5162 2.517	0.5375 2.515	0.5588 2.510	0.5801 2.522
0.4953 2.517	0.5166 2.525	0.5379 2.515	0.5592 2.508	0.5805 2.515
0.4958 2.517	0.5171 2.519	0.5384 2.513	0.5597 2.512	0.5810 2.520
0.4962 2.516	0.5175 2.521	0.5388 2.509	0.5601 2.511	0.5814 2.517
0.4967 2.522	0.5180 2.519	0.5393 2.519	0.5606 2.512	0.5819 2.517
0.4971 2.515	0.5184 2.517	0.5397 2.522	0.5610 2.515	0.5823 2.521
0.4976 2.519	0.5189 2.518	0.5402 2.517	0.5615 2.517	0.5828 2.513
0.4980 2.522	0.5193 2.519	0.5406 2.517	0.5620 2.514	0.5833 2.516
0.4985 2.514	0.5198 2.518	0.5411 2.517	0.5624 2.513	0.5837 2.517
0.4989 2.521	0.5202 2.512	0.5415 2.517	0.5629 2.507	0.5842 2.520
0.4994 2.522	0.5207 2.515	0.5420 2.516	0.5633 2.515	0.5846 2.514
0.4998 2.518	0.5211 2.511	0.5424 2.507	0.5638 2.516	0.5851 2.514
0.5003 2.524	0.5216 2.516	0.5429 2.510	0.5642 2.513	0.5855 2.520
0.5008 2.518	0.5221 2.516	0.5433 2.512	0.5647 2.518	0.5860 2.515
0.5012 2.524	0.5225 2.516	0.5438 2.514	0.5651 2.518	0.5864 2.508
0.5017 2.521	0.5230 2.514	0.5442 2.516	0.5656 2.514	0.5869 2.508
0.5021 2.522	0.5234 2.521	0.5447 2.520	0.5660 2.510	0.5873 2.516
0.5026 2.525	0.5239 2.519	0.5452 2.519	0.5665 2.509	0.5878 2.516
0.5030 2.515	0.5243 2.520	0.5456 2.512	0.5669 2.517	0.5882 2.511
0.5035 2.519	0.5248 2.517	0.5461 2.512	0.5674 2.514	0.5887 2.505
0.5039 2.517	0.5252 2.517	0.5465 2.517	0.5678 2.515	0.5892 2.514
0.5044 2.515	0.5257 2.521	0.5470 2.515	0.5683 2.519	0.5896 2.509
0.5048 2.515	0.5261 2.522	0.5474 2.516	0.5687 2.515	0.5901 2.514
0.5053 2.517	0.5266 2.513	0.5479 2.512	0.5692 2.520	0.5905 2.518
0.5057 2.518	0.5270 2.524	0.5483 2.516	0.5697 2.518	0.5910 2.513
0.5062 2.526	0.5275 2.521	0.5488 2.515	0.5701 2.515	0.5915 2.522
0.5066 2.516	0.5279 2.524	0.5492 2.511	0.5706 2.513	0.5919 2.517
0.5071 2.520	0.5284 2.516	0.5497 2.514	0.5710 2.520	0.5924 2.515
0.5076 2.522	0.5289 2.518	0.5501 2.516	0.5715 2.519	0.5928 2.521
0.5080 2.523	0.5293 2.518	0.5506 2.514	0.5719 2.504	0.5933 2.515
0.5085 2.518	0.5298 2.520	0.5511 2.519	0.5724 2.517	0.5937 2.519
0.5089 2.521	0.5302 2.517	0.5515 2.517	0.5728 2.518	0.5942 2.513
0.5094 2.518	0.5307 2.519	0.5520 2.519	0.5733 2.515	0.5946 2.517
0.5098 2.512	0.5311 2.515	0.5524 2.516	0.5737 2.516	0.5951 2.521

0.5955 2.520	0.3448 2.509	0.3520 2.499	0.3594 2.494	0.3666 2.503
0.5960 2.510	0.3450 2.516	0.3522 2.504	0.3596 2.516	0.3667 2.522
0.5965 2.514	0.3451 2.506	0.3523 2.514	0.3597 2.513	0.3669 2.511
0.5969 2.513	0.3453 2.496	0.3525 2.517	0.3599 2.507	0.3670 2.503
0.5974 2.518	0.3455 2.499	0.3526 2.502	0.3600 2.490	0.3672 2.499
0.5979 2.510	0.3456 2.506	0.3528 2.515	0.3602 2.519	0.3673 2.514
0.5983 2.509	0.3458 2.515	0.3529 2.512	0.3603 2.521	0.3675 2.486
0.5988 2.515	0.3459 2.504	0.3531 2.500	0.3605 2.516	0.3676 2.511
0.5992 2.503	0.3461 2.506	0.3532 2.514	0.3606 2.505	0.3678 2.502
0.5997 2.513	0.3462 2.512	0.3534 2.500	0.3608 2.509	0.3679 2.510
0.6001 2.513	0.3464 2.503	0.3535 2.503	0.3609 2.520	0.3681 2.508
2453930 +	0.3465 2.509	0.3537 2.497	0.3611 2.501	0.3682 2.524
0.3395 2.514	0.3467 2.513	0.3538 2.518	0.3612 2.506	0.3684 2.519
0.3397 2.499	0.3468 2.514	0.3540 2.502	0.3614 2.506	0.3685 2.507
0.3398 2.516	0.3470 2.508	0.3541 2.507	0.3615 2.516	0.3687 2.504
0.3400 2.513	0.3471 2.505	0.3543 2.509	0.3617 2.513	0.3688 2.529
0.3401 2.516	0.3473 2.521	0.3544 2.511	0.3618 2.505	0.3690 2.489
0.3403 2.521	0.3474 2.506	0.3546 2.505	0.3620 2.517	0.3691 2.518
0.3404 2.508	0.3476 2.494	0.3550 2.508	0.3621 2.521	0.3693 2.507
0.3406 2.506	0.3477 2.508	0.3551 2.503	0.3623 2.504	2453932 +
0.3407 2.496	0.3479 2.520	0.3553 2.509	0.3625 2.509	0.3624 2.410
0.3409 2.505	0.3480 2.509	0.3554 2.509	0.3626 2.509	0.3631 2.395
0.3410 2.501	0.3482 2.515	0.3556 2.511	0.3628 2.507	0.3635 2.433
0.3412 2.507	0.3483 2.500	0.3557 2.512	0.3629 2.504	0.3639 2.389
0.3413 2.489	0.3485 2.519	0.3559 2.495	0.3631 2.509	0.3643 2.378
0.3415 2.500	0.3487 2.507	0.3560 2.508	0.3632 2.504	0.3646 2.376
0.3416 2.499	0.3488 2.513	0.3562 2.513	0.3634 2.505	0.3650 2.391
0.3418 2.510	0.3490 2.503	0.3564 2.523	0.3635 2.507	0.3654 2.412
0.3420 2.510	0.3491 2.500	0.3565 2.504	0.3637 2.506	0.3658 2.391
0.3421 2.506	0.3493 2.513	0.3567 2.511	0.3638 2.515	0.3662 2.397
0.3423 2.523	0.3494 2.517	0.3568 2.517	0.3640 2.498	0.3666 2.411
0.3424 2.508	0.3496 2.509	0.3570 2.505	0.3641 2.508	0.3669 2.412
0.3426 2.500	0.3497 2.503	0.3571 2.508	0.3643 2.509	0.3673 2.409
0.3427 2.493	0.3499 2.499	0.3573 2.507	0.3644 2.514	0.3677 2.413
0.3429 2.512	0.3500 2.515	0.3574 2.497	0.3646 2.492	0.3681 2.402
0.3430 2.510	0.3502 2.508	0.3576 2.505	0.3647 2.513	0.3685 2.422
0.3432 2.531	0.3503 2.509	0.3577 2.512	0.3649 2.504	0.3689 2.412
0.3433 2.513	0.3505 2.518	0.3579 2.505	0.3650 2.505	0.3692 2.396
0.3435 2.518	0.3506 2.512	0.3580 2.518	0.3652 2.505	0.3696 2.404
0.3436 2.518	0.3508 2.502	0.3582 2.506	0.3653 2.498	0.3700 2.404
0.3438 2.501	0.3509 2.500	0.3583 2.514	0.3655 2.510	0.3704 2.391
0.3439 2.502	0.3511 2.508	0.3585 2.502	0.3656 2.492	0.3708 2.418
0.3441 2.508	0.3512 2.512	0.3586 2.500	0.3658 2.517	0.3712 2.421
0.3442 2.516	0.3514 2.513	0.3588 2.501	0.3659 2.501	0.3719 2.406
0.3444 2.498	0.3515 2.513	0.3589 2.515	0.3661 2.509	0.3723 2.418
0.3445 2.513	0.3517 2.521	0.3591 2.507	0.3663 2.506	0.3727 2.401
0.3447 2.530	0.3518 2.501	0.3592 2.516	0.3664 2.515	0.3731 2.426

0.3735 2.384	0.4094 2.531	0.3409 2.495	0.3488 2.491	0.3561 2.520
0.3738 2.422	0.4098 2.472	0.3410 2.533	0.3490 2.523	0.3563 2.526
0.3742 2.421	0.4102 2.512	0.3420 2.525	0.3491 2.545	0.3565 2.527
0.3746 2.407	0.4105 2.493	0.3421 2.518	0.3493 2.539	0.3566 2.517
0.3750 2.426	0.4109 2.499	0.3423 2.524	0.3494 2.529	0.3568 2.525
0.3754 2.419	0.4113 2.500	0.3424 2.533	0.3496 2.546	0.3569 2.526
0.3761 2.431	0.4117 2.482	0.3426 2.547	0.3498 2.520	0.3571 2.517
0.3765 2.436	0.4121 2.469	0.3427 2.518	0.3499 2.529	0.3572 2.537
0.3769 2.427	0.4125 2.504	0.3429 2.534	0.3501 2.526	0.3574 2.521
0.3773 2.443	2453934 +	0.3430 2.530	0.3502 2.510	0.3575 2.517
0.3777 2.369	0.3345 2.539	0.3432 2.525	0.3504 2.529	0.3577 2.522
0.3781 2.451	0.3346 2.515	0.3433 2.545	0.3505 2.527	0.3578 2.526
0.3784 2.433	0.3352 2.535	0.3435 2.524	0.3507 2.538	0.3580 2.522
0.3788 2.403	0.3357 2.530	0.3436 2.522	0.3508 2.512	0.3581 2.526
0.3792 2.456	0.3358 2.502	0.3438 2.533	0.3510 2.512	0.3583 2.524
0.3796 2.443	0.3360 2.524	0.3439 2.538	0.3511 2.514	0.3584 2.516
0.3800 2.428	0.3362 2.525	0.3441 2.522	0.3513 2.522	0.3586 2.533
0.3804 2.443	0.3363 2.532	0.3442 2.524	0.3514 2.532	0.3587 2.522
0.3807 2.441	0.3365 2.515	0.3444 2.524	0.3516 2.527	0.3589 2.506
0.3811 2.428	0.3366 2.548	0.3445 2.539	0.3517 2.516	0.3590 2.521
0.3864 2.414	0.3368 2.515	0.3447 2.519	0.3519 2.513	0.3592 2.521
0.3870 2.418	0.3369 2.529	0.3448 2.532	0.3520 2.521	0.3593 2.519
0.3874 2.437	0.3371 2.530	0.3450 2.552	0.3522 2.540	0.3595 2.531
0.3878 2.432	0.3372 2.515	0.3452 2.535	0.3523 2.525	0.3596 2.510
0.3881 2.427	0.3374 2.541	0.3453 2.511	0.3525 2.535	0.3598 2.525
0.3885 2.408	0.3375 2.536	0.3455 2.513	0.3526 2.532	0.3599 2.513
0.3889 2.438	0.3377 2.541	0.3456 2.541	0.3528 2.523	0.3601 2.519
0.3893 2.424	0.3378 2.525	0.3458 2.504	0.3529 2.527	0.3603 2.513
0.3902 2.433	0.3380 2.527	0.3459 2.526	0.3531 2.520	0.3604 2.521
0.3906 2.419	0.3381 2.546	0.3461 2.529	0.3533 2.517	0.3606 2.514
0.3922 2.442	0.3383 2.509	0.3462 2.506	0.3534 2.516	0.3607 2.516
0.3926 2.409	0.3385 2.511	0.3464 2.504	0.3536 2.528	0.3609 2.517
0.3930 2.423	0.3386 2.514	0.3465 2.539	0.3537 2.530	0.3610 2.514
0.3933 2.421	0.3388 2.535	0.3467 2.524	0.3539 2.531	0.3612 2.517
0.3937 2.422	0.3389 2.540	0.3468 2.503	0.3540 2.529	0.3613 2.527
0.3941 2.434	0.3391 2.542	0.3470 2.510	0.3542 2.529	0.3615 2.536
0.3945 2.434	0.3392 2.522	0.3471 2.505	0.3543 2.526	0.3616 2.536
0.3949 2.410	0.3394 2.534	0.3473 2.528	0.3545 2.516	0.3618 2.494
0.4059 2.457	0.3395 2.520	0.3474 2.528	0.3546 2.521	0.3619 2.499
0.4063 2.466	0.3397 2.515	0.3476 2.545	0.3548 2.513	0.3621 2.518
0.4067 2.482	0.3398 2.529	0.3477 2.527	0.3549 2.510	0.3622 2.519
0.4071 2.526	0.3400 2.515	0.3479 2.521	0.3551 2.529	0.3624 2.525
0.4075 2.491	0.3401 2.519	0.3480 2.532	0.3552 2.518	0.3625 2.523
0.4079 2.539	0.3403 2.537	0.3482 2.516	0.3554 2.533	0.3627 2.499
0.4082 2.539	0.3404 2.547	0.3483 2.557	0.3555 2.550	0.3628 2.497
0.4086 2.471	0.3406 2.541	0.3485 2.536	0.3557 2.516	0.3630 2.521
0.4090 2.510	0.3407 2.528	0.3486 2.546	0.3560 2.543	0.3631 2.514

0.3633 2.507	0.3711 2.555	0.3785 2.545	0.3418 2.513	0.3491 2.506
0.3634 2.523	0.3714 2.498	0.3788 2.501	0.3419 2.508	0.3492 2.499
0.3636 2.540	0.3715 2.554	0.3791 2.520	0.3422 2.509	0.3494 2.519
0.3637 2.516	0.3717 2.522	0.3794 2.531	0.3424 2.525	0.3496 2.519
0.3639 2.521	0.3718 2.540	2453935 +	0.3425 2.509	0.3497 2.508
0.3641 2.521	0.3720 2.512	0.3321 2.510	0.3427 2.510	0.3499 2.503
0.3642 2.521	0.3721 2.545	0.3325 2.520	0.3429 2.510	0.3500 2.516
0.3644 2.492	0.3723 2.528	0.3329 2.521	0.3430 2.514	0.3502 2.521
0.3645 2.526	0.3726 2.542	0.3352 2.512	0.3432 2.511	0.3503 2.514
0.3647 2.516	0.3727 2.552	0.3356 2.523	0.3433 2.512	0.3506 2.502
0.3648 2.518	0.3729 2.526	0.3359 2.516	0.3435 2.519	0.3507 2.500
0.3650 2.487	0.3730 2.519	0.3362 2.515	0.3436 2.513	0.3509 2.515
0.3651 2.534	0.3732 2.525	0.3365 2.514	0.3438 2.505	0.3511 2.495
0.3653 2.512	0.3733 2.541	0.3366 2.513	0.3439 2.495	0.3512 2.507
0.3655 2.486	0.3735 2.536	0.3368 2.519	0.3441 2.492	0.3514 2.513
0.3658 2.538	0.3737 2.526	0.3369 2.530	0.3442 2.513	0.3515 2.514
0.3659 2.484	0.3738 2.525	0.3371 2.509	0.3444 2.519	0.3517 2.519
0.3661 2.497	0.3740 2.519	0.3372 2.514	0.3445 2.523	0.3518 2.516
0.3662 2.540	0.3741 2.549	0.3374 2.512	0.3447 2.493	0.3520 2.521
0.3665 2.503	0.3743 2.525	0.3375 2.513	0.3448 2.496	0.3521 2.515
0.3667 2.523	0.3744 2.520	0.3377 2.514	0.3450 2.500	0.3523 2.501
0.3668 2.484	0.3746 2.546	0.3378 2.520	0.3451 2.528	0.3524 2.509
0.3670 2.525	0.3747 2.534	0.3380 2.527	0.3453 2.505	0.3526 2.520
0.3671 2.533	0.3749 2.503	0.3381 2.524	0.3454 2.505	0.3527 2.505
0.3673 2.528	0.3750 2.525	0.3383 2.511	0.3456 2.517	0.3529 2.521
0.3674 2.503	0.3752 2.537	0.3384 2.508	0.3458 2.493	0.3530 2.505
0.3676 2.507	0.3753 2.542	0.3386 2.516	0.3459 2.506	0.3532 2.503
0.3677 2.517	0.3755 2.527	0.3387 2.514	0.3461 2.503	0.3533 2.516
0.3679 2.531	0.3756 2.537	0.3389 2.530	0.3462 2.519	0.3535 2.508
0.3680 2.526	0.3758 2.545	0.3390 2.521	0.3464 2.504	0.3536 2.516
0.3683 2.520	0.3759 2.651	0.3392 2.517	0.3465 2.516	0.3538 2.507
0.3685 2.514	0.3761 2.510	0.3935 2.513	0.3467 2.523	0.3539 2.504
0.3686 2.546	0.3762 2.547	0.3395 2.513	0.3468 2.506	0.3541 2.512
0.3689 2.518	0.3764 2.560	0.3397 2.496	0.3470 2.513	0.3542 2.512
0.3691 2.545	0.3765 2.550	0.3398 2.525	0.3471 2.506	0.3544 2.509
0.3692 2.508	0.3767 2.808	0.3400 2.510	0.3473 2.505	0.3545 2.508
0.3694 2.540	0.3768 2.526	0.3401 2.520	0.3474 2.508	0.3547 2.508
0.3695 2.495	0.3770 2.564	0.3403 2.510	0.3476 2.512	0.3548 2.516
0.3697 2.521	0.3771 2.556	0.3404 2.513	0.3477 2.513	0.3550 2.511
0.3699 2.509	0.3773 2.613	0.3406 2.522	0.3479 2.507	0.3552 2.509
0.3700 2.546	0.3775 2.527	0.3407 2.500	0.3480 2.514	0.3553 2.513
0.3702 2.521	0.3776 2.532	0.3409 2.519	0.3482 2.518	0.3555 2.510
0.3703 2.529	0.3778 2.547	0.3410 2.522	0.3483 2.509	0.3556 2.502
0.3705 2.531	0.3779 2.528	0.3412 2.509	0.3485 2.510	0.3558 2.530
0.3706 2.528	0.3781 2.533	0.3413 2.517	0.3486 2.520	0.3559 2.513
0.3708 2.543	0.3782 2.494	0.3415 2.505	0.3488 2.518	0.3561 2.518
0.3709 2.509	0.3784 2.548	0.3416 2.527	0.3489 2.499	0.3562 2.501

0.3564 2.512	0.3635 2.520	0.3707 2.509	0.3779 2.512	0.3859 2.508
0.3565 2.515	0.3637 2.518	0.3709 2.509	0.3780 2.508	0.3861 2.507
0.3567 2.518	0.3638 2.517	0.3710 2.499	0.3782 2.519	0.3862 2.520
0.3568 2.513	0.3640 2.512	0.3712 2.497	0.3783 2.519	0.3864 2.518
0.3570 2.521	0.3641 2.505	0.3713 2.508	0.3785 2.505	0.3865 2.509
0.3571 2.519	0.3643 2.520	0.3715 2.520	0.3788 2.520	0.3867 2.510
0.3573 2.516	0.3644 2.499	0.3716 2.508	0.3790 2.498	0.3868 2.523
0.3574 2.515	0.3646 2.520	0.3718 2.512	0.3791 2.524	0.3870 2.507
0.3576 2.527	0.3647 2.521	0.3720 2.498	0.3793 2.519	0.3871 2.509
0.3577 2.512	0.3649 2.514	0.3721 2.533	0.3794 2.501	0.3873 2.503
0.3579 2.526	0.3650 2.512	0.3723 2.508	0.3796 2.516	0.3874 2.507
0.3580 2.517	0.3652 2.518	0.3724 2.509	0.3797 2.516	0.3876 2.499
0.3582 2.521	0.3653 2.522	0.3726 2.521	0.3799 2.519	0.3877 2.513
0.3583 2.523	0.3655 2.519	0.3727 2.505	0.3800 2.513	0.3879 2.504
0.3585 2.503	0.3656 2.510	0.3729 2.511	0.3802 2.523	0.3880 2.501
0.3587 2.514	0.3659 2.521	0.3730 2.520	0.3803 2.504	0.3882 2.515
0.3588 2.514	0.3660 2.517	0.3732 2.513	0.3805 2.500	0.3883 2.516
0.3590 2.500	0.3662 2.520	0.3733 2.503	0.3806 2.505	0.3885 2.527
0.3591 2.526	0.3663 2.520	0.3735 2.513	0.3808 2.510	0.3886 2.508
0.3593 2.515	0.3665 2.534	0.3736 2.508	0.3809 2.515	0.3888 2.515
0.3594 2.516	0.3666 2.507	0.3738 2.512	0.3818 2.501	0.3890 2.518
0.3596 2.513	0.3668 2.535	0.3739 2.520	0.3820 2.507	0.3891 2.514
0.3597 2.529	0.3669 2.516	0.3741 2.520	0.3821 2.506	0.3893 2.508
0.3599 2.514	0.3671 2.517	0.3742 2.513	0.3823 2.519	0.3894 2.497
0.3600 2.520	0.3672 2.511	0.3744 2.518	0.3824 2.508	0.3896 2.520
0.3602 2.527	0.3674 2.510	0.3745 2.507	0.3826 2.530	0.3897 2.514
0.3603 2.503	0.3675 2.507	0.3747 2.527	0.3827 2.527	0.3899 2.513
0.3605 2.524	0.3677 2.517	0.3748 2.518	0.3829 2.509	0.3900 2.505
0.3606 2.518	0.3678 2.512	0.3750 2.522	0.3830 2.498	0.3902 2.525
0.3608 2.511	0.3680 2.525	0.3751 2.519	0.3832 2.505	0.3903 2.523
0.3609 2.518	0.3681 2.523	0.3753 2.525	0.3833 2.514	0.3905 2.513
0.3611 2.524	0.3683 2.512	0.3755 2.518	0.3835 2.521	0.3906 2.514
0.3612 2.518	0.3684 2.508	0.3756 2.518	0.3836 2.525	0.3908 2.525
0.3614 2.517	0.3686 2.504	0.3758 2.507	0.3838 2.511	0.3909 2.520
0.3615 2.513	0.3688 2.516	0.3759 2.529	0.3839 2.516	0.3911 2.500
0.3617 2.524	0.3689 2.502	0.3761 2.520	0.3841 2.490	0.3912 2.511
0.3618 2.515	0.3691 2.527	0.3762 2.520	0.3842 2.521	0.3914 2.512
0.3620 2.515	0.3692 2.519	0.3764 2.504	0.3844 2.512	0.3915 2.500
0.3621 2.500	0.3694 2.526	0.3765 2.517	0.3845 2.501	0.3917 2.501
0.3623 2.513	0.3695 2.527	0.3767 2.527	0.3847 2.506	0.3919 2.506
0.3624 2.528	0.3697 2.538	0.3768 2.515	0.3848 2.508	0.3920 2.528
0.3626 2.506	0.3698 2.507	0.3770 2.520	0.3850 2.513	0.3922 2.523
0.3628 2.512	0.3700 2.522	0.3771 2.509	0.3852 2.498	0.3923 2.524
0.3629 2.526	0.3701 2.511	0.3773 2.501	0.3853 2.522	0.3925 2.522
0.3631 2.514	0.3703 2.509	0.3774 2.514	0.3855 2.526	0.3926 2.509
0.3632 2.525	0.3704 2.527	0.3776 2.517	0.3856 2.515	0.3928 2.515
0.3634 2.519	0.3706 2.519	0.3777 2.506	0.3858 2.512	0.3929 2.508

0.3931 2.519	0.4008 2.505	0.4083 2.509	0.3448 2.517	0.3520 2.513
0.3932 2.511	0.4011 2.503	0.4084 2.499	0.3450 2.504	0.3521 2.503
0.3934 2.522	0.4013 2.515	0.4086 2.515	0.3451 2.513	0.3523 2.514
0.3935 2.514	0.4014 2.534	0.4087 2.513	0.3453 2.508	0.3524 2.516
0.3937 2.515	0.4016 2.521	0.4089 2.515	0.3454 2.502	0.3526 2.503
0.3938 2.508	0.4017 2.521	0.4090 2.498	0.3456 2.524	0.3527 2.521
0.3940 2.510	0.4019 2.519	0.4092 2.518	0.3457 2.510	0.3529 2.507
0.3941 2.523	0.4020 2.507	0.4093 2.500	0.3459 2.517	0.3530 2.516
0.3943 2.517	0.4022 2.514	0.4095 2.522	0.3460 2.528	0.3532 2.514
0.3944 2.519	0.4023 2.513	0.4096 2.503	0.3462 2.519	0.3533 2.508
0.3946 2.516	0.4025 2.509	0.4098 2.507	0.3463 2.458	0.3535 2.526
0.3947 2.522	0.4026 2.522	0.4099 2.514	0.3465 2.511	0.3536 2.517
0.3949 2.504	0.4028 2.524	0.4101 2.503	0.3466 2.508	0.3538 2.493
0.3950 2.499	0.4031 2.512	0.4102 2.523	0.3468 2.496	0.3539 2.507
0.3952 2.493	0.4032 2.515	0.4104 2.502	0.3469 2.505	0.3541 2.510
0.3953 2.512	0.4034 2.508	0.4106 2.519	0.3471 2.508	0.3542 2.506
0.3955 2.501	0.4035 2.512	0.4107 2.502	0.3472 2.519	0.3544 2.517
0.3957 2.509	0.4037 2.514	0.4108 2.524	0.3474 2.505	0.3545 2.507
0.3958 2.517	0.4038 2.508	0.4110 2.504	0.3475 2.513	0.3547 2.506
0.3960 2.522	0.4040 2.513	0.4111 2.500	0.3477 2.492	0.3548 2.519
0.3961 2.533	0.4042 2.513	0.4113 2.499	0.3479 2.505	0.3550 2.500
0.3963 2.505	0.4043 2.517	0.4115 2.503	0.3480 2.504	0.3551 2.523
0.3964 2.503	0.4045 2.500	0.4116 2.508	0.3482 2.524	0.3553 2.506
0.3966 2.505	0.4046 2.510	0.4118 2.505	0.3483 2.524	0.3555 2.518
0.3967 2.525	0.4048 2.513	0.4119 2.504	0.3485 2.506	0.3556 2.523
0.3969 2.517	0.4049 2.501	0.4121 2.505	0.3486 2.520	0.3558 2.509
0.3976 2.504	0.4051 2.506	0.4122 2.510	0.3488 2.515	0.3559 2.496
0.3978 2.492	0.4052 2.522	0.4124 2.509	0.3489 2.507	0.3561 2.518
0.3979 2.509	0.4054 2.504	2453936 +	0.3491 2.522	0.3562 2.517
0.3981 2.507	0.4055 2.516	0.3421 2.509	0.3492 2.517	0.3564 2.524
0.3982 2.512	0.4057 2.503	0.3422 2.500	0.3494 2.514	0.3565 2.518
0.3984 2.509	0.4058 2.510	0.3424 2.513	0.3495 2.511	0.3567 2.524
0.3985 2.502	0.4060 2.523	0.3425 2.502	0.3497 2.505	0.3568 2.501
0.3987 2.506	0.4061 2.508	0.3427 2.501	0.3498 2.518	0.3570 2.508
0.3988 2.497	0.4063 2.515	0.3428 2.520	0.3500 2.514	0.3571 2.512
0.3990 2.529	0.4064 2.520	0.3430 2.510	0.3501 2.503	0.3575 2.519
0.3991 2.514	0.4066 2.510	0.3431 2.506	0.3503 2.498	0.3576 2.517
0.3993 2.516	0.4067 2.499	0.3433 2.509	0.3504 2.507	0.3578 2.507
0.3994 2.504	0.4069 2.524	0.3434 2.507	0.3506 2.524	0.3579 2.512
0.3996 2.507	0.4070 2.514	0.3436 2.515	0.3507 2.510	0.3581 2.521
0.3997 2.505	0.4072 2.495	0.3437 2.500	0.3509 2.506	0.3582 2.517
0.3999 2.511	0.4073 2.528	0.3439 2.514	0.3510 2.511	0.3584 2.507
0.4000 2.521	0.4075 2.512	0.3441 2.502	0.3512 2.513	0.3585 2.503
0.4002 2.533	0.4076 2.517	0.3442 2.522	0.3513 2.506	0.3587 2.512
0.4004 2.502	0.4078 2.516	0.3444 2.506	0.3515 2.523	0.3588 2.509
0.4005 2.504	0.4080 2.504	0.3445 2.516	0.3517 2.519	0.3590 2.512
0.4007 2.508	0.4081 2.523	0.3447 2.515	0.3518 2.513	0.3591 2.503

0.3593 2.522	0.3664 2.524	0.3736 2.508	0.3807 2.503	0.3886 2.504
0.3594 2.507	0.3666 2.501	0.3737 2.518	0.3809 2.521	0.3887 2.512
0.3596 2.513	0.3667 2.511	0.3739 2.524	0.3810 2.514	0.3889 2.512
0.3597 2.518	0.3669 2.525	0.3740 2.509	0.3812 2.518	0.3890 2.516
0.3599 2.508	0.3671 2.526	0.3742 2.513	0.3813 2.500	0.3892 2.496
0.3600 2.501	0.3672 2.521	0.3744 2.504	0.3815 2.506	0.3894 2.510
0.3602 2.512	0.3674 2.516	0.3745 2.510	0.3817 2.519	0.3895 2.518
0.3603 2.502	0.3675 2.512	0.3747 2.519	0.3818 2.519	0.3897 2.524
0.3605 2.510	0.3677 2.516	0.3748 2.512	0.3820 2.530	0.3898 2.523
0.3607 2.522	0.3678 2.503	0.3750 2.503	0.3821 2.515	0.3900 2.515
0.3608 2.528	0.3680 2.517	0.3751 2.520	0.3823 2.520	0.3901 2.519
0.3610 2.519	0.3681 2.520	0.3753 2.503	0.3824 2.500	0.3903 2.503
0.3611 2.520	0.3683 2.506	0.3754 2.515	0.3826 2.496	0.3904 2.516
0.3613 2.518	0.3684 2.516	0.3756 2.509	0.3827 2.514	0.3906 2.515
0.3614 2.513	0.3686 2.523	0.3757 2.517	0.3829 2.527	0.3907 2.509
0.3616 2.527	0.3687 2.514	0.3759 2.519	0.3830 2.508	0.3909 2.522
0.3617 2.506	0.3689 2.506	0.3760 2.511	0.3832 2.541	0.3910 2.515
0.3619 2.525	0.3690 2.516	0.3762 2.520	0.3833 2.517	0.3912 2.509
0.3620 2.509	0.3692 2.517	0.3763 2.499	0.3835 2.516	0.3913 2.512
0.3622 2.514	0.3693 2.523	0.3765 2.507	0.3836 2.507	0.3915 2.525
0.3623 2.530	0.3695 2.520	0.3766 2.513	0.3838 2.517	0.3916 2.513
0.3625 2.528	0.3696 2.526	0.3768 2.507	0.3839 2.529	0.3918 2.511
0.3626 2.512	0.3698 2.521	0.3769 2.523	0.3841 2.513	0.3919 2.520
0.3628 2.506	0.3699 2.497	0.3771 2.508	0.3842 2.499	0.3921 2.507
0.3629 2.515	0.3701 2.504	0.3772 2.522	0.3844 2.497	0.3922 2.503
0.3631 2.511	0.3702 2.517	0.3774 2.524	0.3845 2.509	0.3924 2.517
0.3632 2.508	0.3704 2.511	0.3775 2.512	0.3847 2.508	0.3925 2.508
0.3634 2.512	0.3705 2.506	0.3777 2.504	0.3848 2.511	0.3927 2.518
0.3636 2.523	0.3707 2.507	0.3779 2.512	0.3850 2.506	0.3929 2.501
0.3637 2.521	0.3709 2.511	0.3780 2.506	0.3852 2.507	0.3930 2.523
0.3639 2.518	0.3710 2.505	0.3782 2.499	0.3853 2.525	0.3932 2.500
0.3640 2.516	0.3712 2.515	0.3783 2.515	0.3855 2.509	0.3933 2.524
0.3642 2.513	0.3713 2.502	0.3785 2.510	0.3856 2.515	0.3935 2.501
0.3643 2.502	0.3715 2.519	0.3786 2.499	0.3858 2.512	0.3936 2.508
0.3645 2.517	0.3716 2.504	0.3788 2.518	0.3859 2.519	0.3938 2.512
0.3646 2.525	0.3718 2.497	0.3789 2.496	0.3861 2.511	0.3939 2.512
0.3648 2.518	0.3719 2.511	0.3791 2.507	0.3862 2.524	0.3941 2.521
0.3649 2.529	0.3721 2.520	0.3792 2.493	0.3864 2.517	0.3942 2.509
0.3651 2.518	0.3722 2.520	0.3794 2.501	0.3865 2.502	0.3944 2.524
0.3652 2.511	0.3724 2.505	0.3795 2.512	0.3867 2.509	0.3945 2.512
0.3654 2.507	0.3725 2.513	0.3797 2.504	0.3868 2.505	0.3947 2.513
0.3655 2.520	0.3727 2.530	0.3798 2.520	0.3870 2.504	0.3948 2.510
0.3657 2.520	0.3728 2.514	0.3800 2.514	0.3871 2.511	0.3950 2.512
0.3658 2.520	0.3730 2.504	0.3801 2.506	0.3873 2.510	0.3951 2.503
0.3660 2.510	0.3731 2.502	0.3803 2.523	0.3874 2.508	0.3953 2.509
0.3661 2.503	0.3733 2.506	0.3804 2.511	0.3876 2.519	0.3954 2.508
0.3663 2.529	0.3734 2.508	0.3806 2.504	0.3877 2.496	0.3956 2.509

0.3957 2.519	0.3989 2.507	0.4021 2.500	0.4053 2.508	0.4085 2.497
0.3959 2.504	0.3991 2.521	0.4023 2.520	0.4055 2.502	0.4087 2.499
0.3960 2.525	0.3992 2.531	0.4024 2.524	0.4057 2.515	0.4089 2.503
0.3962 2.503	0.3994 2.510	0.4026 2.513	0.4058 2.513	0.4090 2.524
0.3963 2.511	0.3995 2.502	0.4028 2.529	0.4060 2.511	0.4092 2.508
0.3965 2.518	0.3997 2.515	0.4029 2.509	0.4061 2.522	0.4093 2.502
0.3967 2.497	0.3998 2.512	0.4031 2.502	0.4063 2.477	0.4095 2.505
0.3968 2.502	0.4000 2.504	0.4032 2.531	0.4064 2.515	0.4096 2.502
0.3970 2.512	0.4002 2.507	0.4034 2.514	0.4066 2.520	0.4098 2.506
0.3971 2.516	0.4003 2.516	0.4035 2.506	0.4067 2.492	0.4099 2.507
0.3973 2.510	0.4005 2.497	0.4037 2.503	0.4069 2.530	0.4101 2.500
0.3974 2.503	0.4006 2.524	0.4038 2.501	0.4070 2.526	0.4102 2.499
0.3976 2.502	0.4008 2.509	0.4040 2.508	0.4072 2.514	0.4104 2.508
0.3977 2.514	0.4009 2.516	0.4041 2.504	0.4073 2.506	0.4105 2.492
0.3979 2.504	0.4011 2.501	0.4043 2.514	0.4075 2.498	0.4107 2.516
0.3980 2.514	0.4012 2.504	0.4044 2.489	0.4076 2.503	0.4108 2.511
0.3982 2.515	0.4014 2.491	0.4046 2.494	0.4078 2.500	0.4110 2.507
0.3983 2.506	0.4015 2.508	0.4047 2.520	0.4079 2.501	0.4111 2.487
0.3985 2.505	0.4017 2.500	0.4049 2.507	0.4081 2.527	0.4113 2.511
0.3986 2.512	0.4018 2.508	0.4050 2.519	0.4082 2.492	
0.3988 2.516	0.4020 2.504	0.4052 2.502	0.4084 2.492	

This dataset is highly valuable if the changes in the star's pulsation will be later investigated. The archived files are: GD154-v-c1.arch and GD154-c2-c1.arch.

DK Cygni

The photographic light curve of DK Cyg has indicated that the system is of W Ursae Majoris type, that is, an eclipsing binary system. In this case the light variation is not due to the pulsation of a single star, but the system consists of a pair of stars in a tight, circular orbit and during every orbital cycle each star eclipses the other resulting in a decrease in the brightness. Their characteristic is the near equal minima and the continuous light variation. Since its discovery (Guthnick and Prager, 1927) more observations have been obtained during the past years. We carried out photoelectric observations in Johnson *U*, *B* and *V* colours in 1985, in a Hungarian-Egyptian project. The journal of the observations are given in Table 133.

Observations were made on five nights and altogether around 200 measurements were obtained in each colours at Piskéstető, the mountain station of Konkoly Observatory, by the 50cm telescope. An investigation for the time of minima for both the primary and secondary minimum was published in Paparó, Hamdy & Jankovics (1985). The composite light curves in different colours, the times of minima are listed and the O-C curve has been given. The O-C curve proved that the orbital period of the system is increasing. The steady increase of the period is given in the published paper. The composite light curve was published, but the original data has not been available for the astronomical community. The original observations are given here in the Table 134, 135 and 136 for *V*, *B* and *U* colours.

Table 133. Journal of observations of DK Cyg

Date (UT)	HJD 2400000+	Length day	Length hour	Number of obs.	Filter
Jul 3/4 1985	46250	0.1367	3.28	33	UBV
Aug 22/23 1985	46300	0.1249	3.00	33	UBV
Aug 23/24 1985	46301	0.2151	5.16	57	UBV
Aug 24/25 1985	46302	0.1603	3.85	45	UBV
Aug 25/26 1985	46303	0.2326	5.58	62	UBV

Table 134. The data of DK Cygni in *V* colour

2446250 +	2446300 +	2446301 +	0.518808 0.122	0.490591 0.151
0.409329 0.231	0.411400 0.390	0.389468 0.686	0.527639 0.128	0.492477 0.156
0.411227 0.210	0.413287 0.391	0.398993 0.685	0.529537 0.141	0.499561 0.182
0.413113 0.201	0.415173 0.401	0.400879 0.681	0.531424 0.136	0.501470 0.205
0.420856 0.159	0.423114 0.452	0.402778 0.668	0.539965 0.136	0.503357 0.208
0.422743 0.161	0.425000 0.465	0.410023 0.654	0.541864 0.145	0.510382 0.241
0.433761 0.116	0.426887 0.500	0.411899 0.656	0.543750 0.131	0.512269 0.256
0.435648 0.125	0.435150 0.524	0.413784 0.654	0.552245 0.144	0.514155 0.285
0.437535 0.127	0.437037 0.554	0.421667 0.610	0.554143 0.166	0.522442 0.289
0.445695 0.120	0.438924 0.589	0.423554 0.573	0.556031 0.173	0.524329 0.305
0.447581 0.127	0.447442 0.646	0.425428 0.554	0.563588 0.193	0.526226 0.311
0.449468 0.153	0.449329 0.637	0.432592 0.514	0.565486 0.206	0.533483 0.370
0.457129 0.091	0.451226 0.644	0.434468 0.499	0.567373 0.214	0.535370 0.377
0.459021 0.112	0.459503 0.671	0.436342 0.481	0.575255 0.256	0.537269 0.379
0.460903 0.107	0.461389 0.634	0.444190 0.416	0.577152 0.268	0.544733 0.444
0.471389 0.129	0.463275 0.618	0.446064 0.402	0.579039 0.278	0.546632 0.451
0.473276 0.132	0.471458 0.617	0.447952 0.393	0.587315 0.341	0.548519 0.494
0.475162 0.137	0.473357 0.612	0.455602 0.359	0.589213 0.359	0.555672 0.557
0.490509 0.214	0.475243 0.620	0.457488 0.344	0.591099 0.380	0.557569 0.594
0.496394 0.243	0.483160 0.583	0.459375 0.314	2446302 +	0.559456 0.600
0.498276 0.244	0.485046 0.544	0.466933 0.271	0.433646 0.188	0.566528 0.684
0.500162 0.282	0.486945 0.533	0.468819 0.274	0.435533 0.174	0.568415 0.670
0.507430 0.289	0.495000 0.461	0.470706 0.259	0.437431 0.166	0.570301 0.696
0.509317 0.306	0.496887 0.419	0.478507 0.238	0.444791 0.160	0.578727 0.690
0.511204 0.318	0.498785 0.405	0.480393 0.222	0.446678 0.153	0.580625 0.701
0.518831 0.346	0.507384 0.328	0.482280 0.211	0.448577 0.153	0.582511 0.697
0.520718 0.374	0.509271 0.342	0.490000 0.191	0.455593 0.135	0.589953 0.697
0.522604 0.378	0.511169 0.335	0.491887 0.186	0.457488 0.134	0.591841 0.699
0.530058 0.441	0.520243 0.293	0.493773 0.178	0.459375 0.137	0.593727 0.691
0.531944 0.452	0.522130 0.284	0.503299 0.168	0.466319 0.120	2446303 +
0.533831 0.469	0.524016 0.295	0.505197 0.132	0.468206 0.128	0.354607 0.286
0.542234 0.581	0.532476 0.262	0.507083 0.126	0.470092 0.131	0.356481 0.299
0.544120 0.621	0.534364 0.234	0.515034 0.129	0.476678 0.158	0.365556 0.239
0.546007 0.617	0.536261 0.226	0.516922 0.135	0.488703 0.143	0.367454 0.233

0.369340	0.224	0.413564	0.129	0.458796	0.262	0.503785	0.642	0.550000	0.510
0.376192	0.184	0.420683	0.140	0.465857	0.297	0.511100	0.689	0.558507	0.412
0.378079	0.177	0.422569	0.136	0.467743	0.328	0.512998	0.682	0.560393	0.390
0.379977	0.156	0.424456	0.151	0.469641	0.351	0.514884	0.687	0.562281	0.389
0.387153	0.156	0.431921	0.171	0.477257	0.398	0.522697	0.686	0.571076	0.346
0.389039	0.137	0.433808	0.178	0.479143	0.416	0.524584	0.687	0.572963	0.342
0.390938	0.148	0.435695	0.187	0.481033	0.419	0.526482	0.701	0.574850	0.312
0.398866	0.133	0.442824	0.195	0.488079	0.473	0.534236	0.662	0.583356	0.274
0.400752	0.128	0.444710	0.205	0.489977	0.497	0.536123	0.661	0.585243	0.254
0.402639	0.145	0.446609	0.224	0.491864	0.521	0.538009	0.635	0.587230	0.254
0.409791	0.113	0.455011	0.248	0.500000	0.591	0.546227	0.536		
0.411678	0.122	0.456898	0.254	0.501898	0.625	0.548114	0.534		

The light curves from night-to-nights are presented in Figure 95. As labels show the first, second and third coloumn give the V , B and U light curves.

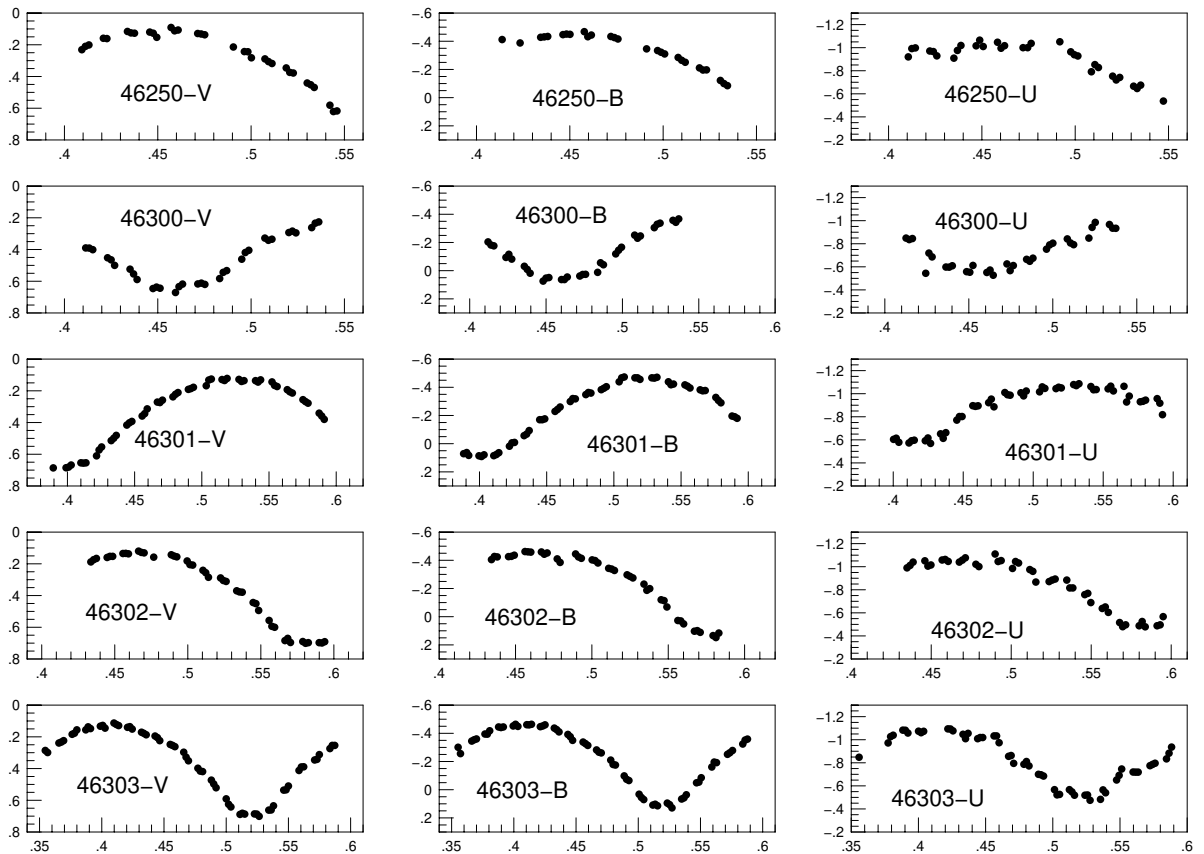


Figure 95: Light curves of DK Cyg in V , B and U colours.

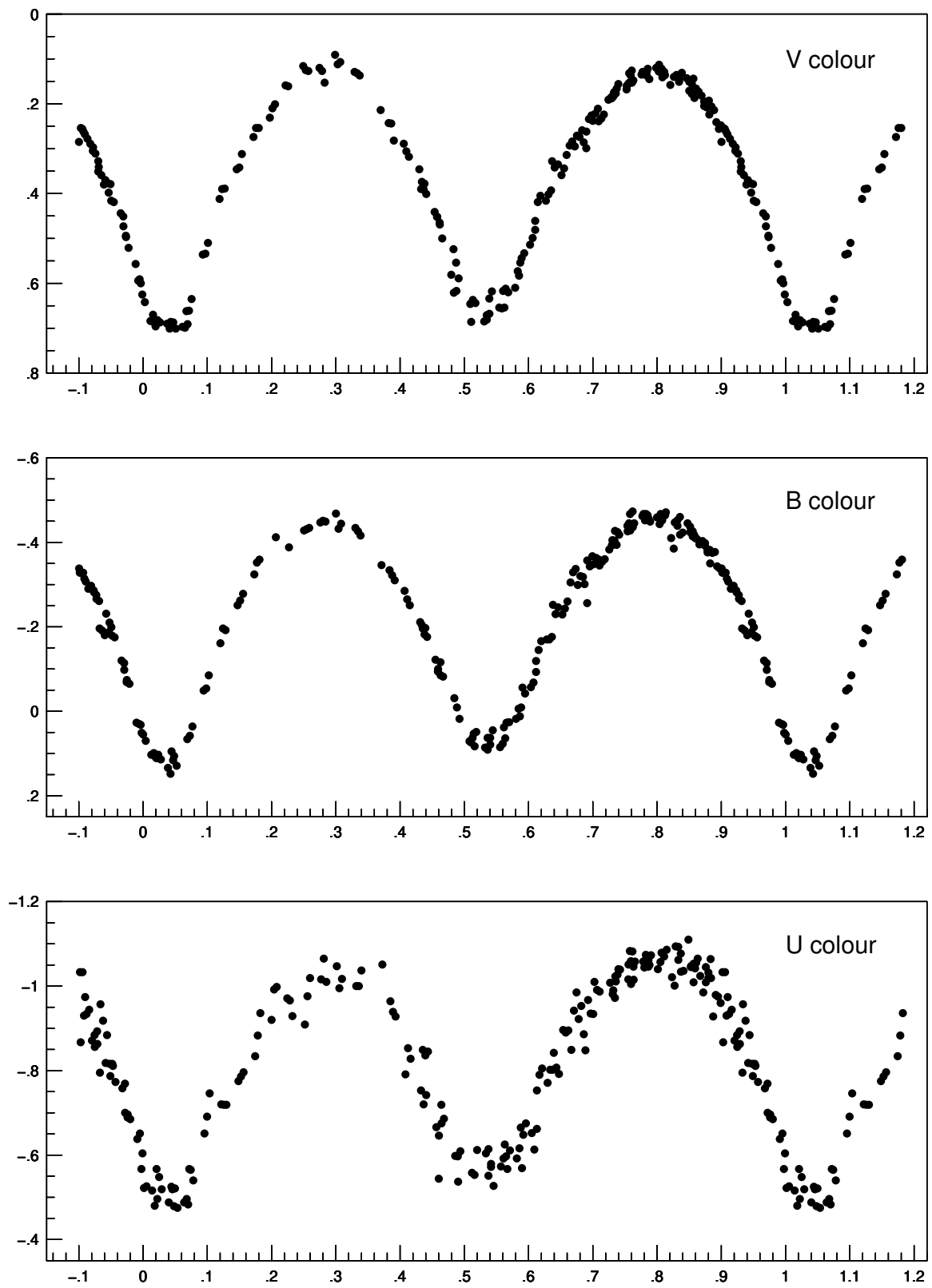


Figure 96: Phase diagram of DK Cyg in V , B and U colours.

Table 135. The data of DK Cygni in *B* colour

2446250 +	0.473981 +0.027	0.490614 -0.383	0.500185 -0.403
0.413738 -0.412	0.475868 +0.026	0.492511 -0.393	0.502083 -0.398
0.423357 -0.388	0.483784 +0.012	0.494398 -0.404	0.503970 -0.381
0.434387 -0.428	0.485672 -0.056	0.503923 -0.439	0.510996 -0.343
0.436273 -0.431	0.487569 -0.042	0.505822 -0.467	0.512894 -0.338
0.438160 -0.434	0.495625 -0.119	0.507708 -0.473	0.514780 -0.328
0.446319 -0.447	0.497511 -0.145	0.515660 -0.467	0.523067 -0.297
0.448206 -0.451	0.499399 -0.166	0.517546 -0.467	0.524954 -0.286
0.450093 -0.449	0.508009 -0.252	0.519433 -0.456	0.526852 -0.275
0.457756 -0.468	0.509896 -0.230	0.528264 -0.467	0.534109 -0.231
0.459641 -0.432	0.511782 -0.246	0.530162 -0.465	0.535996 -0.187
0.461528 -0.444	0.520868 -0.305	0.532048 -0.471	0.537894 -0.199
0.472003 -0.434	0.522754 -0.329	0.540591 -0.439	0.545359 -0.120
0.473900 -0.426	0.524642 -0.337	0.542488 -0.418	0.547257 -0.114
0.475787 -0.416	0.533102 -0.357	0.544375 -0.423	0.549143 -0.069
0.491134 -0.346	0.534988 -0.343	0.552871 -0.417	0.556296 +0.027
0.497014 -0.334	0.536875 -0.367	0.554769 -0.408	0.558195 +0.030
0.498900 -0.322	2446301 +	0.556655 -0.395	0.560081 +0.051
0.500798 -0.310	0.388206 +0.071	0.564213 -0.382	0.567153 +0.103
0.508044 -0.285	0.390468 +0.063	0.566099 -0.375	0.569039 +0.099
0.509942 -0.265	0.391991 +0.083	0.567998 -0.377	0.570937 +0.111
0.511829 -0.251	0.399619 +0.086	0.575879 -0.328	0.579352 +0.134
0.519456 -0.211	0.401505 +0.091	0.577766 -0.307	0.581250 +0.148
0.521342 -0.196	0.403391 +0.079	0.579665 -0.290	0.583137 +0.116
0.523230 -0.197	0.410637 +0.085	0.587940 -0.196	2446303 +
0.530672 -0.122	0.412523 +0.077	0.589826 -0.191	0.355220 -0.301
0.532569 -0.100	0.414398 +0.064	0.591725 -0.180	0.357129 -0.256
0.534456 -0.085	0.422291 +0.018	2446302 +	0.366180 -0.345
2446300 +	0.424167 -0.006	0.434259 -0.405	0.368068 -0.354
0.412014 -0.204	0.426053 -0.009	0.436157 -0.427	0.369965 -0.360
0.413912 -0.182	0.433206 -0.057	0.438044 -0.424	0.376817 -0.395
0.415799 -0.176	0.435081 -0.068	0.445417 -0.426	0.378703 -0.394
0.423727 -0.094	0.436968 -0.093	0.447303 -0.428	0.380591 -0.418
0.425625 -0.116	0.444814 -0.170	0.449190 -0.436	0.387778 -0.445
0.427511 -0.082	0.446690 -0.170	0.456218 -0.462	0.389664 -0.441
0.435776 -0.031	0.448565 -0.176	0.458102 -0.460	0.391562 -0.445
0.437662 -0.009	0.456227 -0.229	0.460000 -0.458	0.399491 -0.452
0.439549 +0.018	0.458102 -0.243	0.466945 -0.459	0.401377 -0.464
0.448067 +0.074	0.459988 -0.260	0.468831 -0.443	0.403264 -0.449
0.449954 +0.053	0.467546 -0.299	0.470718 -0.452	0.410417 -0.461
0.451840 +0.049	0.469444 -0.320	0.477303 -0.410	0.412304 -0.460
0.460127 +0.063	0.471331 -0.318	0.479190 -0.385	0.414190 -0.464
0.462014 +0.063	0.479132 -0.348	0.489329 -0.445	0.421296 -0.447
0.463901 +0.045	0.481019 -0.363	0.491203 -0.424	0.423195 -0.452
0.472084 +0.038	0.482905 -0.359	0.493102 -0.414	0.425081 -0.460

0.432534 −0.437	0.470255 −0.261	0.513611 +0.103	0.559121 −0.161
0.434433 −0.426	0.477882 −0.210	0.515509 +0.114	0.561019 −0.196
0.436319 −0.410	0.479769 −0.179	0.523322 +0.095	0.562905 −0.192
0.443450 −0.392	0.481655 −0.175	0.525208 +0.106	0.571702 −0.251
0.445336 −0.376	0.488703 −0.098	0.527095 +0.129	0.573588 −0.262
0.447222 −0.350	0.490602 −0.074	0.534861 +0.066	0.575745 −0.278
0.455637 −0.338	0.492488 −0.065	0.536748 +0.058	0.583981 −0.324
0.457523 −0.327	0.500687 −0.032	0.538634 +0.036	0.585868 −0.352
0.459445 −0.314	0.502523 +0.055	0.546841 −0.049	0.587755 −0.359
0.466481 −0.282	0.504410 +0.070	0.548738 −0.054	
0.468369 −0.266	0.511724 +0.109	0.550625 −0.085	

Table 136. The data of DK Cygni in U colour

2446250 +	2446300 +	0.537500 −0.934	0.518172 −1.056
0.410579 −0.920	0.412639 −0.849	2446301 +	0.520057 −1.050
0.412466 −0.992	0.414526 −0.836	0.400243 −0.604	0.528889 −1.079
0.414352 −0.998	0.416423 −0.845	0.402129 −0.614	0.530787 −1.070
0.422095 −0.971	0.424352 −0.544	0.404016 −0.579	0.532674 −1.086
0.423981 −0.966	0.426250 −0.719	0.411261 −0.573	0.541215 −1.062
0.425864 −0.929	0.428137 −0.686	0.413137 −0.592	0.543125 −1.034
0.435000 −0.909	0.436389 −0.598	0.415023 −0.597	0.545000 −1.036
0.436899 −0.976	0.438287 −0.597	0.422905 −0.592	0.553495 −1.042
0.438784 −1.019	0.440173 −0.609	0.424792 −0.616	0.555382 −1.065
0.446913 −1.016	0.448692 −0.558	0.426667 −0.569	0.557280 −1.024
0.448831 −1.065	0.450579 −0.553	0.433831 −0.652	0.564838 −1.064
0.450717 −1.010	0.452465 −0.612	0.435706 −0.613	0.566725 −0.928
0.458379 −1.047	0.460741 −0.551	0.437581 −0.662	0.568623 −0.979
0.460266 −0.995	0.462639 −0.572	0.445428 −0.771	0.576505 −0.930
0.462153 −1.017	0.464526 −0.527	0.447303 −0.802	0.578391 −0.934
0.472063 −1.000	0.472708 −0.625	0.449190 −0.802	0.580289 −0.944
0.474514 −1.000	0.474595 −0.567	0.456840 −0.896	0.588564 −0.957
0.476412 −1.037	0.476493 −0.611	0.458727 −0.890	0.590452 −0.918
0.491760 −1.051	0.484410 −0.665	0.460614 −0.895	0.592350 −0.818
0.497627 −0.964	0.486296 −0.648	0.468172 −0.922	2446302 +
0.499526 −0.939	0.488183 −0.675	0.470069 −0.953	0.434884 −0.990
0.501424 −0.928	0.496250 −0.753	0.471956 −0.886	0.436771 −1.011
0.508669 −0.791	0.498137 −0.790	0.479746 −1.010	0.438669 −1.040
0.510556 −0.853	0.500023 −0.805	0.481644 −0.991	0.446041 −1.051
0.512443 −0.828	0.508634 −0.842	0.483530 −0.987	0.447939 −1.005
0.520069 −0.753	0.510521 −0.807	0.491238 −1.008	0.449815 −1.015
0.521968 −0.720	0.512408 −0.792	0.493137 −0.981	0.456840 −1.058
0.523854 −0.742	0.521481 −0.849	0.495023 −1.023	0.458727 −1.063
0.531296 −0.666	0.523380 −0.942	0.504549 −1.016	0.460625 −1.046
0.533183 −0.646	0.525266 −0.985	0.506435 −1.059	0.467558 −1.040
0.535081 −0.675	0.533727 −0.967	0.508333 −1.046	0.469444 −1.057
0.547257 −0.537	0.535614 −0.935	0.516285 −1.044	0.471342 −1.077

0.477928 -1.021	0.560706 -0.604	0.423819 -1.093	0.505035 -0.526
0.479815 -1.001	0.567778 -0.516	0.425706 -1.077	0.512350 -0.567
0.489942 -1.110	0.569664 -0.480	0.433160 -1.047	0.514236 -0.548
0.491829 -1.045	0.571551 -0.496	0.435046 -1.009	0.516134 -0.519
0.493716 -1.053	0.579977 -0.488	0.436945 -1.055	0.523947 -0.519
0.500821 -0.985	0.581863 -0.525	0.444074 -1.009	0.525833 -0.521
0.502708 -1.045	0.583761 -0.479	0.445960 -1.019	0.527720 -0.475
0.504595 -1.032	0.591192 -0.488	0.447847 -1.019	0.535486 -0.483
0.511632 -0.975	0.593091 -0.496	0.456262 -1.033	0.537373 -0.565
0.513518 -0.960	0.594976 -0.567	0.458148 -1.033	0.539259 -0.540
0.515405 -0.867	2446303 +	0.460035 -0.974	0.547465 -0.651
0.523692 -0.871	0.355845 -0.848	0.467107 -0.856	0.549352 -0.691
0.525579 -0.884	0.377442 -0.972	0.468993 -0.863	0.551250 -0.746
0.527465 -0.893	0.379329 -1.027	0.470879 -0.795	0.559745 -0.720
0.534734 -0.884	0.381216 -1.039	0.478495 -0.787	0.561643 -0.719
0.536620 -0.816	0.388402 -1.083	0.480393 -0.811	0.563530 -0.719
0.538518 -0.816	0.390290 -1.082	0.482280 -0.773	0.572326 -0.775
0.545983 -0.758	0.392176 -1.058	0.489329 -0.700	0.574213 -0.786
0.547870 -0.769	0.400104 -1.074	0.491215 -0.696	0.576099 -0.796
0.549769 -0.689	0.402002 -1.061	0.493114 -0.685	0.584595 -0.834
0.556921 -0.638	0.403889 -1.073	0.501261 -0.567	0.586493 -0.883
0.558808 -0.651	0.421922 -1.094	0.503148 -0.522	0.588379 -0.936

The composite light curve, the phase diagram also presented here in Figure 96. To get a better view of the minimum, the presentation gives the curve from -0.2 to 1.2 . The appropriate phase values are given in Table 137, 138 and 139.

Table 137. The phase data of DK Cygni in V colour

2446250 +	.38230 0.243	.45759 0.452	.61433 0.419	.57912 0.610
.19732 0.231	.38629 0.244	.46160 0.465	.61836 0.405	.58313 0.573
.20136 0.210	.39030 0.282	.46561 0.500	.63663 0.328	.58711 0.554
.20536 0.201	.40574 0.289	.48316 0.524	.64064 0.342	.60233 0.514
.22181 0.159	.40975 0.306	.48717 0.554	.64578 0.335	.60632 0.499
.22582 0.161	.41376 0.318	.49118 0.589	.66395 0.293	.61030 0.481
.24923 0.116	.42996 0.346	.50928 0.646	.66796 0.284	.62697 0.416
.25324 0.125	.43397 0.374	.51329 0.637	.67196 0.295	.63095 0.402
.25725 0.127	.43798 0.378	.51732 0.644	.68994 0.262	.63496 0.393
.27458 0.120	.45382 0.441	.53490 0.671	.69395 0.234	.65122 0.359
.27859 0.127	.45782 0.452	.53891 0.634	.69798 0.226	.65522 0.344
.28260 0.153	.46183 0.469	.54292 0.618	2446301 +	.65923 0.314
.29888 0.091	.47968 0.581	.56030 0.617	.51071 0.686	.67529 0.271
.30290 0.112	.48369 0.621	.56434 0.612	.53095 0.685	.67930 0.274
.30689 0.107	.48770 0.617	.56834 0.620	.53496 0.681	.68331 0.259
.32917 0.129	2446300 +	.58516 0.583	.53899 0.668	.69988 0.238
.33318 0.132	.43271 0.390	.58917 0.544	.55438 0.654	.70389 0.222
.33719 0.137	.43672 0.391	.59320 0.533	.55837 0.656	.70790 0.211
.36979 0.214	.44072 0.401	.61032 0.461	.56237 0.654	.72430 0.191

.72831 0.186	.72917 0.188	.94932 0.379	.76304 0.148	.97746 0.521
.73231 0.178	.73318 0.174	.96518 0.444	.77988 0.133	.99475 0.591
.75255 0.168	.73721 0.166	.96922 0.451	.78389 0.128	.99878 0.625
.75658 0.132	.75285 0.160	.97322 0.494	.78790 0.145	.00279 0.642
.76059 0.126	.75686 0.153	.98842 0.557	.80309 0.113	.01833 0.689
.77748 0.129	.76089 0.153	.99245 0.594	.80710 0.122	.02236 0.682
.78149 0.135	.77580 0.135	.99646 0.600	.81111 0.129	.02637 0.687
.78550 0.122	.77983 0.134	.01149 0.684	.82623 0.140	.04297 0.686
.80426 0.128	.78383 0.137	.01549 0.670	.83024 0.136	.04698 0.687
.80829 0.141	.79859 0.120	.01950 0.696	.83425 0.151	.05101 0.701
.81230 0.136	.80260 0.128	.03740 0.690	.85011 0.171	.06748 0.662
.83045 0.136	.80660 0.131	.04143 0.701	.85412 0.178	.07149 0.661
.83448 0.145	.82060 0.158	.04544 0.697	.85813 0.187	.07550 0.635
.83849 0.131	.84614 0.143	.06125 0.697	.87327 0.195	.09296 0.536
.85654 0.144	.85015 0.151	.06526 0.699	.87728 0.205	.09697 0.534
.86057 0.166	.85416 0.156	.06927 0.691	.88131 0.224	.10097 0.510
.86458 0.173	.86921 0.182	2446303 +	.89916 0.248	.11905 0.412
.88064 0.193	.87327 0.205	.68585 0.286	.90317 0.254	.12305 0.390
.88467 0.206	.87728 0.208	.68983 0.299	.90721 0.262	.12706 0.389
.88868 0.214	.89220 0.241	.70911 0.239	.92221 0.297	.14575 0.346
.90542 0.256	.89621 0.256	.71315 0.233	.93025 0.328	.14976 0.342
.90945 0.268	.90022 0.285	.71715 0.224	.93025 0.351	.15377 0.312
.91346 0.278	.91782 0.289	.73171 0.184	.94643 0.398	.17184 0.274
.93105 0.341	.92183 0.305	.73572 0.177	.95043 0.416	.17585 0.254
.93508 0.359	.92586 0.311	.73975 0.156	.95445 0.419	.18007 0.254
.93909 0.380	.94128 0.370	.75500 0.156	.96942 0.473	
2446302 +	.94529 0.377	.75900 0.137	.97345 0.497	

Table 138. The phase data of DK Cygni in B colour

2446250 +	.38762 -0.322	.46693 -0.082	.61565 -0.145	.54029 +0.079
.20669 -0.412	.39165 -0.310	.48449 -0.031	.61966 -0.166	.55569 +0.085
.22713 -0.388	.40705 -0.285	.48850 -0.009	.63796 -0.252	.55969 +0.077
.25056 -0.428	.41108 -0.265	.49251 +0.018	.64196 -0.230	.56368 +0.064
.25457 -0.431	.41509 -0.251	.51061 +0.074	.64597 -0.246	.58045 +0.018
.25858 -0.434	.43129 -0.211	.51462 +0.053	.66528 -0.305	.58443 -0.006
.27591 -0.447	.43530 -0.196	.51862 +0.049	.66928 -0.329	.58844 -0.009
.27992 -0.451	.43931 -0.197	.53623 +0.063	.67329 -0.337	.60364 -0.057
.28393 -0.449	.45512 -0.122	.54024 +0.063	.69127 -0.357	.60762 -0.068
.30021 -0.468	.45915 -0.100	.54425 +0.045	.69527 -0.343	.61163 -0.093
.30421 -0.432	.46316 -0.085	.56163 +0.038	.69928 -0.367	.62830 -0.170
.30822 -0.444	2446300 +	.56566 +0.027	2446301 +	.63228 -0.170
.33048 -0.434	.43401 -0.204	.56967 +0.026	.50803 +0.071	.63627 -0.176
.33451 -0.426	.43804 -0.182	.58649 +0.012	.51284 +0.063	.65254 -0.229
.33852 -0.416	.44205 -0.176	.59050 -0.056	.51607 +0.083	.65653 -0.243
.37112 -0.346	.45890 -0.094	.59453 -0.042	.53228 +0.086	.66054 -0.260
.38361 -0.334	.46293 -0.116	.61165 -0.119	.53629 +0.091	.67659 -0.299

.68062 −0.320	.91479 −0.290	.91915 −0.297	.76033 −0.441	.97879 −0.065
.68463 −0.318	.93237 −0.196	.92316 −0.286	.76437 −0.445	.99621 +0.032
.70121 −0.348	.93638 −0.191	.92719 −0.275	.78121 −0.452	.00011 +0.055
.70522 −0.363	.94042 −0.180	.94261 −0.231	.78522 −0.464	.00412 +0.070
.70922 −0.359	2446302 +	.94662 −0.187	.78923 −0.449	.01965 +0.109
.72560 −0.383	.73047 −0.405	.95065 −0.199	.80442 −0.461	.02366 +0.103
.72963 −0.393	.73451 −0.427	.96651 −0.120	.80843 −0.460	.02770 +0.114
.73364 −0.404	.73852 −0.424	.97054 −0.114	.81244 −0.464	.04429 +0.095
.75388 −0.439	.75418 −0.426	.97455 −0.069	.82754 −0.447	.04830 +0.106
.75791 −0.467	.75819 −0.428	.98975 +0.027	.83157 −0.452	.05231 +0.129
.76192 −0.473	.76220 −0.436	.99378 +0.030	.83558 −0.460	.06881 +0.066
.77881 −0.467	.77713 −0.462	.99779 +0.051	.85141 −0.437	.07282 +0.058
.78282 −0.467	.78113 −0.460	.01281 +0.103	.85545 −0.426	.07683 +0.036
.78683 −0.456	.78516 −0.458	.01682 +0.099	.85945 −0.410	.09426 −0.049
.80559 −0.467	.79992 −0.459	.02085 +0.111	.87460 −0.392	.09829 −0.054
.80962 −0.465	.80392 −0.443	.03873 +0.134	.87861 −0.376	.10230 −0.085
.81363 −0.471	.80793 −0.452	.04276 +0.148	.88262 −0.350	.12035 −0.161
.83178 −0.439	.82192 −0.410	.04677 +0.116	.90049 −0.338	.12438 −0.196
.83581 −0.418	.82593 −0.385	2446303 +	.90450 −0.327	.12839 −0.192
.83982 −0.423	.84747 −0.445	.68716 −0.301	.90859 −0.314	.14708 −0.251
.85787 −0.417	.85145 −0.424	.69121 −0.256	.92353 −0.282	.15109 −0.262
.86190 −0.408	.85549 −0.414	.71044 −0.345	.92754 −0.266	.15567 −0.278
.86591 −0.395	.87054 −0.403	.71445 −0.354	.93155 −0.261	.17317 −0.324
.88197 −0.382	.87457 −0.398	.71848 −0.360	.94776 −0.210	.17718 −0.352
.88597 −0.375	.87858 −0.381	.73304 −0.395	.95176 −0.179	.18118 −0.359
.89001 −0.377	.89351 −0.343	.73705 −0.394	.95577 −0.175	
.90675 −0.328	.89754 −0.338	.74106 −0.418	.97074 −0.098	
.91076 −0.307	.90154 −0.328	.75633 −0.445	.97478 −0.074	

Table 139. The phase data of DK Cygni in *U* colour

2446250 +	.33180 −1.000	.49036 −0.537	.54557 −0.527	.69259 −0.967
.19998 −0.920	.33581 −1.000	2446300 +	.56296 −0.625	.69660 −0.935
.20399 −0.992	.33984 −1.037	.43534 −0.849	.56697 −0.567	.70061 −0.934
.20799 −0.998	.37245 −1.051	.43935 −0.836	.57100 −0.611	2446301 +
.22444 −0.971	.38492 −0.964	.44338 −0.845	.58782 −0.665	.53360 −0.604
.22845 −0.966	.38895 −0.939	.46022 −0.544	.5918 −0.648	.53761 −0.614
.23245 −0.929	.39298 −0.928	.46426 −0.719	.59583 −0.675	.54162 −0.579
.25186 −0.909	.40837 −0.791	.46826 −0.686	.61297 −0.753	.55701 −0.573
.25590 −0.976	.41238 −0.853	.48580 −0.598	.61698 −0.790	.56100 −0.592
.25990 −1.019	.41639 −0.828	.48983 −0.597	.62099 −0.805	.56501 −0.597
.27717 −1.016	.43259 −0.753	.49384 −0.609	.63928 −0.842	.58175 −0.592
.28125 −1.065	.43663 −0.720	.51193 −0.558	.64329 −0.807	.58576 −0.616
.28525 −1.010	.44064 −0.742	.51594 −0.553	.64730 −0.792	.58974 −0.569
.30153 −1.047	.45645 −0.666	.51995 −0.612	.66658 −0.849	.60496 −0.652
.30554 −0.995	.46046 −0.646	.53753 −0.551	.67061 −0.942	.60895 −0.613
.30955 −1.017	.46449 −0.675	.54157 −0.572	.67462 −0.985	.61293 −0.662

.62960 -0.771	.86320 -1.065	.85679 -1.053	2446303 +	.95710 -0.773
.63359 -0.802	.86724 -1.024	.87189 -0.985	.68848 -0.848	.97207 -0.700
.63759 -0.802	.88329 -1.064	.87590 -1.045	.73437 -0.972	.97608 -0.696
.65385 -0.896	.88730 -0.928	.87991 -1.032	.73838 -1.027	.98012 -0.685
.65786 -0.890	.89133 -0.979	.89486 -0.975	.74238 -1.039	.99742 -0.567
.66187 -0.895	.90808 -0.930	.89886 -0.960	.75765 -1.083	.00143 -0.522
.67792 -0.922	.91209 -0.934	.90287 -0.867	.76166 -1.082	.00544 -0.526
.68195 -0.953	.91612 -0.944	.92048 -0.871	.76567 -1.058	.02098 -0.567
.68596 -0.886	.93370 -0.957	.92449 -0.884	.78251 -1.074	.02499 -0.548
.70251 -1.010	.93771 -0.918	.92849 -0.893	.78655 -1.061	.02902 -0.519
.70654 -0.991	.94174 -0.818	.94394 -0.884	.79055 -1.073	.04562 -0.519
.71055 -0.987	2446302 +	.94794 -0.816	.82887 -1.094	.04963 -0.521
.72693 -1.008	.73180 -0.990	.95198 -0.816	.83290 -1.093	.05364 -0.475
.73096 -0.981	.73581 -1.011	.96784 -0.758	.83691 -1.077	.07014 -0.483
.73497 -1.023	.73984 -1.040	.97185 -0.769	.85274 -1.047	.07415 -0.565
.75521 -1.016	.75551 -1.051	.97588 -0.689	.85675 -1.009	.07815 -0.540
.75921 -1.059	.75954 -1.005	.99107 -0.638	.86078 -1.055	.09559 -0.651
.76325 -1.046	.76352 -1.015	.99508 -0.651	.87593 -1.009	.09960 -0.691
.78014 -1.044	.77845 -1.058	.99912 -0.604	.87994 -1.019	.10363 -0.746
.78415 -1.056	.78246 -1.063	.01414 -0.516	.88394 -1.019	.12168 -0.720
.78815 -1.050	.78649 -1.046	.01815 -0.480	.90182 -1.033	.12571 -0.719
.80692 -1.079	.80122 -1.040	.02216 -0.496	.90583 -1.033	.12972 -0.719
.81095 -1.070	.80523 -1.057	.04006 -0.488	.90984 -0.974	.14841 -0.775
.81496 -1.086	.80926 -1.077	.04407 -0.525	.92486 -0.856	.15241 -0.786
.83310 -1.062	.82325 -1.021	.04810 -0.479	.92887 -0.863	.15642 -0.796
.83716 -1.034	.82726 -1.001	.06388 -0.488	.93288 -0.795	.17447 -0.834
.84115 -1.036	.84878 -1.110	.06792 -0.496	.94906 -0.787	.17850 -0.883
.85919 -1.042	.85278 -1.045	.07192 -0.567	.95309 -0.811	.18251 -0.936

The data of DK Cyg is highly valuable for further investigation of the increase of orbital period. Hopefully, subsequent investigations will also use the Hungarian observation.

The archived files: dkcyg-V-dat.arch (Table 134), dkcyg-B-dat.arch (Table 135), dkcyg-U-dat.arch (Table 136). The phase files: dkcyg-faz-V-mgo.arch (Table 137), dkcyg-faz-B-mgo.arch (Table 138), dkcyg-faz-U-mgo.arch (Table 139).

8 Draconis

8 Draconis = HR 4916 = ν is a γ Doradus star. It was observed on 5 days in 2003 at Konkoly Observatory. Some facts that I have are the following. The γ Doradus stars pulsate in g-modes. The period of the light variation is rather long, so it is not easy to follow the real light variation on a single night, even on consecutive nights. The most successful solution to get a continuous light curve was international cooperation. I am sure this observation was planned to join a multisite campaign. The journal of the Hungarian observations are given in Table 140. I call the attention to the fact that the stars were observed in five colours, *UBVRI*.

A speciality of the observing run is the number of comparison stars. Four comparison

Table 140. Journal of observations of 8 Draconis

Date (UT)	HJD 2400000+	Length day	Length hour	Comp.	Numb. of obs.	Filter
March 21/22 2003	52720	0.2008	4.82	c1,2,3,4	11	UBVRI
March 22/23 2003	52721	0.2237	5.37	c1,2,3,4	10	UBVRI
March 23/24 2003	52722	0.1518	3.64	c1,2,3,4	11	UBVRI
March 24/25 2003	52723	0.2170	5.21	c1,2,3,4	11	UBVRI
March 25/26 2003	52724	0.0998	2.40	c1.2.3.4	4	UBVRI

stars were used. These are HR 4787 = c1, HR 4795 = c2, HR 4863 = c3, HR 4928 = c4. The long period of pulsation gives the possibility to observe more than two comparison stars, as usually used for other pulsating stars. This possibility gives a great advantage to check the real light variation belonging to the pulsation. Comparing the v-c1, v-c2, v-c3 and v-c4 differential light curves confirm the light variation of 8 Dra = v, itself. The light curves are arranged in one figure in six panels for v-c1, v-c2, v-c3, v-c4, c1-c2 and c3-c4 and in one panel the all-time span is presented. The figures are shown in Fig 97, 98, 99, 100 and 101 for Johnson *V*, *B*, *U*, *R* and *I* colours. The Table 141, 142, 143, 144 and 145 contain all the data shown in the figures. It means that one table contains the data for v-c1, v-c2, v-c3, v-c4, c1-c2 and c3-c4.

Table 141. The differential data of 8 Draconis in *V* colour

V colour	0.6030 1.3337	0.5396 1.3811	0.6368 0.2854	0.5990 0.3352
v-c1	0.6234 1.3599	0.5613 1.3396	2452721 +	0.6230 0.3240
2452720 +	0.6435 1.3709	0.5823 1.2694	0.4198 0.2996	2452723 +
0.4150 1.3544	2452722 +	0.6032 1.2113	0.4424 0.2993	0.4083 0.3344
0.4379 1.3159	0.4041 1.3130	0.6253 1.2746	0.4643 0.2793	0.4296 0.3285
0.4593 1.4367	0.4264 1.3290	2452724 +	0.4852 0.2477	0.4528 0.3268
0.4825 1.4006	0.4477 1.3352	0.4010 1.3668	0.5111 0.2483	0.4764 0.3240
0.5035 1.3990	0.4695 1.3484	0.4227 1.3811	0.5560 0.2483	0.4970 0.3168
0.5250 1.2954	0.4906 1.3686	0.4443 1.4105	0.5813 0.3069	0.5176 0.2878
0.5466 1.3049	0.5113 1.3769	0.5008 1.4244	0.6030 0.2890	0.5396 0.2835
0.5726 1.3828	0.5322 1.3648	v-c2	0.6234 0.2853	0.5613 0.2963
0.5947 1.3873	0.5559 1.3504	2452720 +	0.6435 0.2936	0.5823 0.2972
0.6158 1.3727	0.5776 1.4031	0.4150 0.3484	2452722 +	0.6032 0.3006
0.6368 1.3616	0.5990 1.4014	0.4379 0.3069	0.4041 0.2394	0.6253 0.3021
2452721 +	0.6230 1.4052	0.4593 0.3575	0.4264 0.2569	2452724 +
0.4198 1.3831	2452723 +	0.4825 0.3198	0.4477 0.2590	0.4010 0.3209
0.4424 1.3742	0.4083 1.4043	0.5035 0.3180	0.4695 0.2718	0.4227 0.3148
0.4643 1.3568	0.4296 1.3997	0.5250 0.2878	0.4906 0.2888	0.4443 0.3427
0.4852 1.3186	0.4528 1.3970	0.5466 0.3033	0.5113 0.2970	0.5008 0.3505
0.5111 1.3223	0.4764 1.4008	0.5726 0.3064	0.5322 0.2449	v-c3
0.5560 1.3433	0.4970 1.3936	0.5947 0.3050	0.5559 0.3176	2452720 +
0.5813 1.3404	0.5176 1.4006	0.6158 0.2905	0.5776 0.3298	0.4150 -0.1670

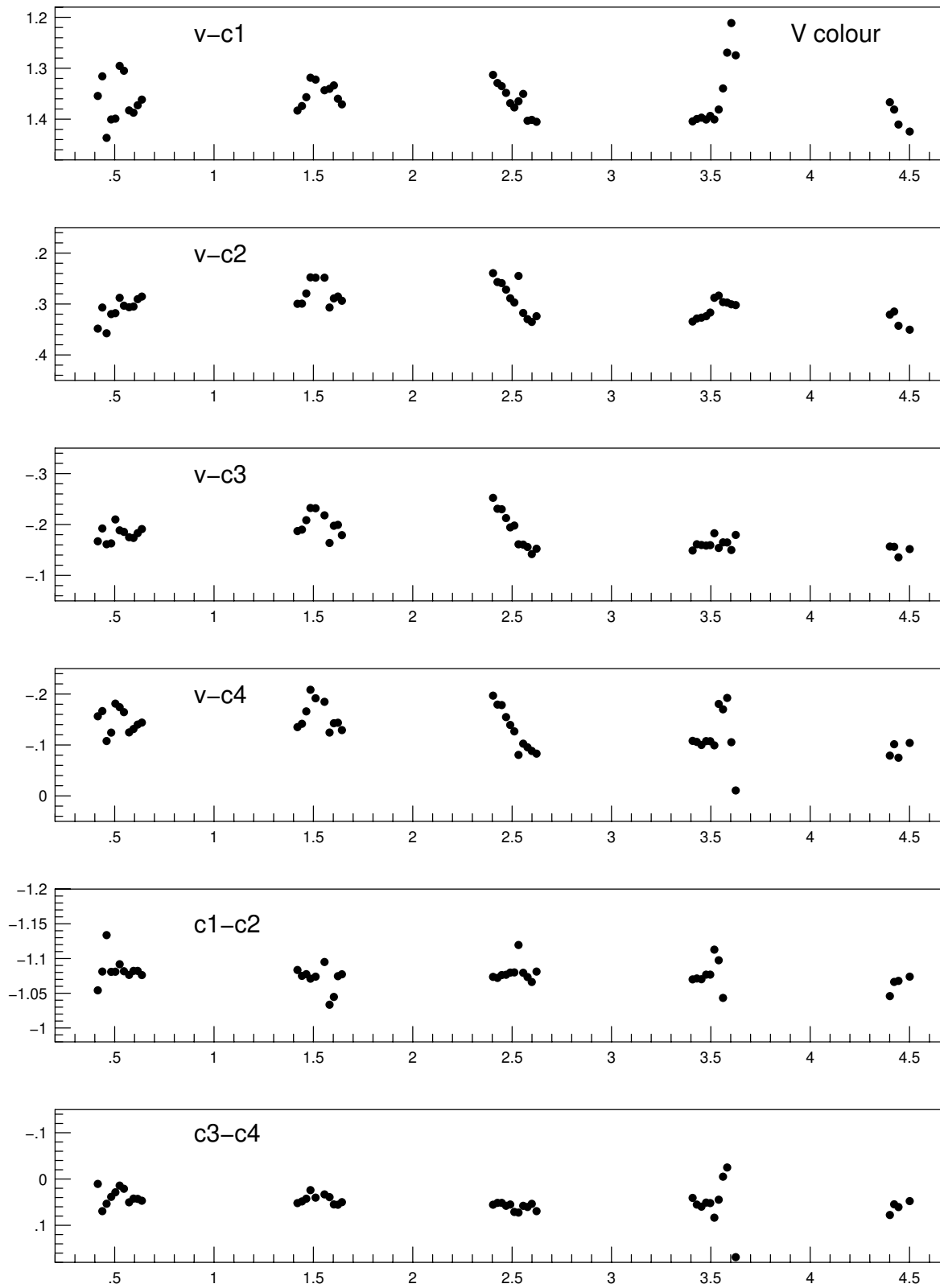


Figure 97: Light curves of 8 Draconis to the comparison stars c1, c2, c3, c4 in V colour. The c1–c2 and c3–c4 comparisons are also printed.

0.4379	-0.1922	0.5823	-0.1647	0.5990	-0.0883	0.6435	-1.0773	0.6368	0.0469
0.4593	-0.1612	0.6032	-0.1499	0.6230	-0.0830	2452722 +		2452721 +	
0.4825	-0.1629	0.625	-0.1795	2452723 +		0.4041	-1.0736	0.4198	0.0520
0.5035	-0.2099	2452724 +		0.4083	-0.1081	0.4264	-1.0721	0.4424	0.0484
0.5250	-0.1885	0.4010	-0.1567	0.4296	-0.1060	0.4477	-1.0762	0.4643	0.0425
0.5466	-0.1855	0.4227	-0.1561	0.4528	-0.1000	0.4695	-1.0766	0.4852	0.0240
0.5726	-0.1750	0.4443	-0.1355	0.4764	-0.1076	0.4906	-1.0797	0.5111	0.0402
0.5947	-0.1736	0.5008	-0.1517	0.4970	-0.1074	0.5113	-1.0800	0.5560	0.0332
0.6158	-0.1830	v-c4		0.5176	-0.0993	0.5322	-1.1195	0.5813	0.0392
0.6368	-0.1910	2452720 +		0.5396	-0.1806	0.5559	-1.0795	0.6030	0.0549
2452721 +		0.4150	-0.1564	0.5613	-0.1700	0.5776	-1.0733	0.6234	0.0556
0.4198	-0.1871	0.4379	-0.1666	0.5823	-0.1924	0.5990	-1.0662	0.6435	0.0500
0.4424	-0.1899	0.4593	-0.1078	0.6032	-0.1054	0.6230	-1.0812	2452722 +	
0.4643	-0.2085	0.4825	-0.1243	0.6253	-0.0107	2452723 +		0.4041	0.0555
0.4852	-0.2324	0.5035	-0.1812	2452724 +		0.4083	-1.0700	0.4264	0.0515
0.5111	-0.2319	0.5250	-0.1742	0.4010	-0.0791	0.4296	-1.0713	0.4477	0.0515
0.5560	-0.2180	0.5466	-0.1645	0.4227	-0.1015	0.4528	-1.0702	0.4695	0.0578
0.5813	-0.1637	0.5726	-0.1247	0.4443	-0.0750	0.4764	-1.0768	0.4906	0.0550
0.6030	-0.1975	0.5947	-0.1314	0.5008	-0.1040	0.4970	-1.0768	0.5113	0.0712
0.6234	-0.1993	0.6158	-0.1401	c1-c2		0.5176	-1.1128	0.5322	0.0725
0.6435	-0.1791	0.6368	-0.1440	2452720 +		0.5396	-1.0975	0.5559	0.0579
2452722 +		2452721 +		0.4150	-1.0542	0.5613	-1.0433	0.5776	0.0604
0.4041	-0.2523	0.4198	-0.1351	0.4379	-1.0812	0.5823	-0.9722	0.5990	0.0536
0.4264	-0.2309	0.4424	-0.1416	0.4593	-1.1337	0.6032	-0.9107	0.6230	0.0694
0.4477	-0.2299	0.4643	-0.1660	0.4825	-1.0808	0.6253	-0.9725	2452723 +	
0.4695	-0.2126	0.4852	-0.2084	0.5035	-1.0810	2452724 +		0.4083	0.0408
0.4906	-0.1943	0.5111	-0.1917	0.5250	-1.0918	0.4010	-1.0459	0.4296	0.0552
0.5113	-0.1979	0.5560	-0.1848	0.5466	-1.0817	0.4227	-1.0663	0.4528	0.0597
0.5322	-0.1611	0.5813	-0.1244	0.5726	-1.0764	0.4443	-1.0678	0.4764	0.0509
0.5559	-0.1605	0.6030	-0.1427	0.5947	-1.0822	0.5008	-1.0739	0.4970	0.0520
0.5776	-0.1558	0.6234	-0.1437	0.6158	-1.0822	c3-c4		0.5176	0.0835
0.5990	-0.1419	0.6435	-0.1292	0.6368	-1.0762	2452720 +		0.5396	0.0447
0.6230	-0.1524	2452722 +		2452721 +		0.4150	0.0106	0.5613	-0.0050
2452723 +		0.4041	-0.1969	0.4198	-1.0835	0.4379	0.0694	0.5823	-0.0249
0.4083	-0.1489	0.4264	-0.1793	0.4424	-1.0750	0.4593	0.0534	0.6032	0.4106
0.4296	-0.1612	0.4477	-0.1784	0.4643	-1.0775	0.4825	0.0386	0.6253	0.1688
0.4528	-0.1597	0.4695	-0.1548	0.4852	-1.0710	0.5035	0.0287	2452724 +	
0.4764	-0.1586	0.4906	-0.1393	0.5111	-1.0739	0.5250	0.0142	0.4010	0.0777
0.4970	-0.1594	0.5113	-0.1267	0.5560	-1.0950	0.5466	0.0211	0.4227	0.0546
0.5176	-0.1828	0.5322	-0.0805	0.5813	-1.0335	0.5726	0.0503	0.4443	0.0606
0.5396	-0.1539	0.5559	-0.1026	0.6030	-1.0447	0.5947	0.0423	0.5008	0.0477
0.5613	-0.1649	0.5776	-0.0954	0.6234	-1.0746	0.6158	0.0429		

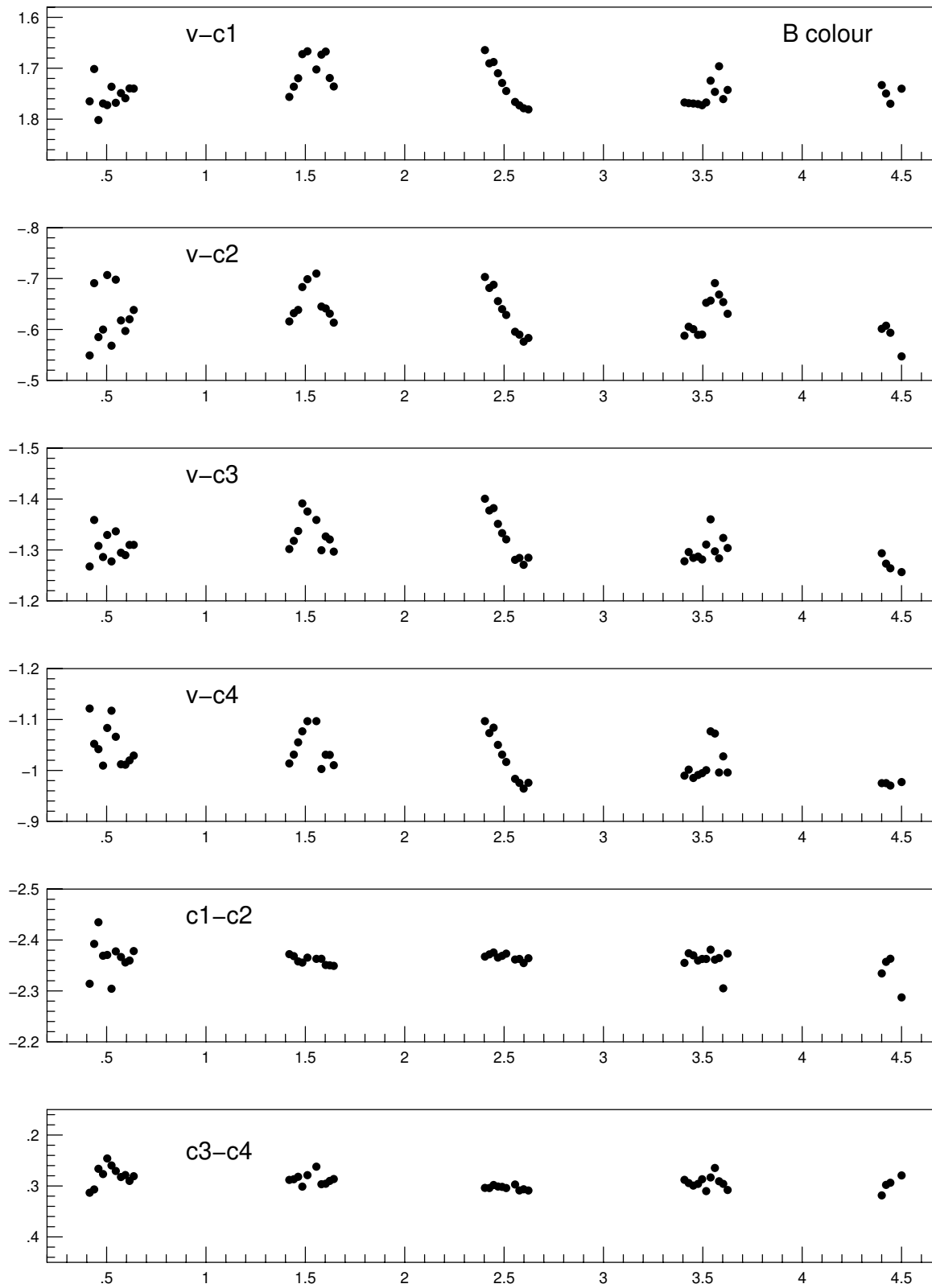


Figure 98: Light curves of 8 Draconis to the comparison stars c1, c2, c3, c4 in B colour. The c1-c2 and c3-c4 comparisons are also printed.

Table 142. The differential data of 8 Draconis in *B* colour

B colour	0.5818 1.6961	0.4290 -0.6054	0.5107 -1.3208	0.6430 -1.0103
v-c1	0.6027 1.7606	0.4522 -0.6006	0.5553 -1.2806	2452722 +
2452720 +	0.6248 1.7426	0.4759 -0.5894	0.5771 -1.2843	0.4036 -1.0968
0.4145 1.7650	2452724 +	0.4965 -0.5901	0.5984 -1.2708	0.4259 -1.0734
0.4373 1.7015	0.4005 1.7331	0.5170 -0.6524	0.6224 -1.2847	0.4471 -1.0840
0.4587 1.8017	0.4221 1.7497	0.5391 -0.6567	2452723 +	0.4690 -1.0502
0.4819 1.7692	0.4437 1.7697	0.5608 -0.6910	0.4077 -1.2778	0.4901 -1.0311
0.5030 1.7724	0.5002 1.7402	0.5818 -0.6685	0.4290 -1.2959	0.5107 -1.0166
0.5245 1.7363	v-c2	0.6027 -0.6538	0.4522 -1.2844	0.5553 -0.9835
0.5461 1.7679	2452720 +	0.6248 -0.6308	0.4759 -1.2870	0.5771 -0.9755
0.5721 1.7489	0.4145 -0.5490	2452724 +	0.4965 -1.2813	0.5984 -0.9643
0.5942 1.7589	0.4373 -0.6909	0.4005 -0.6013	0.5170 -1.3106	0.6224 -0.9758
0.6152 1.7396	0.4587 -0.5850	0.4221 -0.6074	0.5391 -1.3601	2452723 +
0.6363 1.7400	0.4819 -0.5998	0.4437 -0.5935	0.5608 -1.2973	0.4077 -0.9898
2452721 +	0.5030 -0.7069	0.5002 -0.5471	0.5818 -1.2835	0.4290 -1.0016
0.4193 1.7563	0.5245 -0.5681	v-c3	0.6027 -1.3236	0.4522 -0.9852
0.4419 1.7362	0.5461 -0.6978	2452720 +	0.6248 -1.3038	0.4759 -0.9911
0.4637 1.7197	0.5721 -0.6177	0.4145 -1.2675	2452724 +	0.4965 -0.9946
0.4847 1.6723	0.5942 -0.5970	0.4373 -1.3589	0.4005 -1.2935	0.5170 -1.0005
0.5105 1.6667	0.6152 -0.6201	0.4587 -1.3080	0.4221 -1.2731	0.5391 -1.0768
0.5554 1.7024	0.6363 -0.6383	0.4819 -1.2861	0.4437 -1.2640	0.5608 -1.0725
0.5808 1.6733	2452721 +	0.5030 -1.3294	0.5002 -1.2565	0.5818 -0.9959
0.6024 1.6673	0.4193 -0.6158	0.5245 -1.2775	v-c4	0.6027 -1.0276
0.6228 1.7192	0.4419 -0.6320	0.5461 -1.3366	2452720 +	0.6248 -0.9959
0.6430 1.7358	0.4637 -0.6384	0.5721 -1.2946	0.4145 -1.1216	2452724 +
2452722 +	0.4847 -0.6833	0.5942 -1.2898	0.4373 -1.0522	0.4005 -0.9750
0.4036 1.6644	0.5105 -0.6987	0.6152 -1.3099	0.4587 -1.0418	0.4221 -0.9751
0.4259 1.6904	0.5554 -0.7098	0.6363 -1.3100	0.4819 -1.0095	0.4437 -0.9703
0.4471 1.6878	0.5808 -0.6450	2452721 +	0.5030 -1.0834	0.5002 -0.9772
0.4690 1.7099	0.6024 -0.6412	0.4193 -1.3018	0.5245 -1.1173	c1-c2
0.4901 1.7289	0.6228 -0.6311	0.4419 -1.3179	0.5461 -1.0661	2452720 +
0.5107 1.7447	0.6430 -0.6134	0.4637 -1.3372	0.5721 -1.0121	0.4145 -2.3141
0.5553 1.7662	2452722 +	0.4847 -1.3914	0.5942 -1.0112	0.4373 -2.3924
0.5771 1.7730	0.4036 -0.7031	0.5105 -1.3755	0.6152 -1.0197	0.4587 -2.4349
0.5984 1.7786	0.4259 -0.6815	0.5554 -1.3589	0.6363 -1.0292	0.4819 -2.3691
0.6224 1.7809	0.4471 -0.6878	0.5808 -1.2994	2452721 +	0.5030 -2.3707
2452723 +	0.4690 -0.6556	0.6024 -1.3265	0.4193 -1.0137	0.5245 -2.3043
0.4077 1.7673	0.4901 -0.6400	0.6228 -1.3206	0.4419 -1.0311	0.5461 -2.3777
0.4290 1.7686	0.5107 -0.6285	0.6430 -1.2967	0.4637 -1.0552	0.5721 -2.3666
0.4522 1.7693	0.5553 -0.5955	2452722 +	0.4847 -1.0768	0.5942 -2.3559
0.4759 1.7703	0.5771 -0.5898	0.4036 -1.4006	0.5105 -1.0967	0.6152 -2.3597
0.4965 1.7726	0.5984 -0.5760	0.4259 -1.3775	0.5554 -1.0968	0.6363 -2.3783
0.5170 1.7672	0.6224 -0.5833	0.4471 -1.3821	0.5808 -1.0028	2452721 +
0.5391 1.7244	2452723 +	0.4690 -1.3512	0.6024 -1.0309	0.4193 -2.3722
0.5608 1.7464	0.4077 -0.5877	0.4901 -1.3330	0.6228 -1.0305	0.4419 -2.3683

0.4637 -2.3580	0.6224 -2.3642	c3-c4	0.5105 0.2788	0.4077 0.2880
0.4847 -2.3556	2452723 +	2452720 +	0.5554 0.2621	0.4290 0.2943
0.5105 -2.3654	0.4077 -2.3551	0.4145 0.3133	0.5808 0.2966	0.4522 0.2993
0.5554 -2.3630	0.4290 -2.3740	0.4373 0.3068	0.6024 0.2956	0.4759 0.2959
0.5808 -2.3631	0.4522 -2.3699	0.4587 0.2663	0.6228 0.2901	0.4965 0.2868
0.6024 -2.3509	0.4759 -2.3597	0.4819 0.2766	0.6430 0.2864	0.5170 0.3101
0.6228 -2.3503	0.4965 -2.3628	0.5030 0.2460	2452722 +	0.5391 0.2833
0.6430 -2.3492	0.5170 -2.3628	0.5245 0.2597	0.4036 0.3038	0.5608 0.2647
2452722 +	0.5391 -2.3810	0.5461 0.2706	0.4259 0.3041	0.5818 0.2908
0.4036 -2.3674	0.5608 -2.3614	0.5721 0.2825	0.4471 0.2981	0.6027 0.2959
0.4259 -2.3718	0.5818 -2.3646	0.5942 0.2786	0.4690 0.3011	0.6248 0.3079
0.4471 -2.3755	0.6027 -2.3051	0.6152 0.2901	0.4901 0.3018	2452724 +
0.4690 -2.3655	0.6248 -2.3734	0.6363 0.2809	0.5107 0.3041	0.4005 0.3185
0.4901 -2.3689	2452724 +	2452721 +	0.5553 0.2971	0.4221 0.2979
0.5107 -2.3732	0.4005 -2.3344	0.4193 0.2881	0.5771 0.3088	0.4437 0.2937
0.5553 -2.3617	0.4221 -2.3571	0.4419 0.2868	0.5984 0.3065	0.5002 0.2793
0.5771 -2.3628	0.4437 -2.3632	0.4637 0.2820	0.6224 0.3089	
0.5984 -2.3547	0.5002 -2.2873	0.4847 0.3013	2452723 +	

Table 143. The differential data of 8 Draconis in U colour

U colour	2452722 +	0.3999 2.3426	0.6019 -1.9064	0.6021 -2.1851
v-c1	0.4030 2.2794	0.4216 2.3425	0.6223 -1.9000	0.6242 -2.1572
2452720 +	0.4253 2.3009	0.4431 2.3790	0.6426 -1.8803	2452724 +
0.4139 2.3641	0.4465 2.2983	0.4996 2.3355	2452722 +	0.3999 -1.8982
0.4367 2.3320	0.4684 2.3105	v-c2	0.4030 -1.9476	0.4216 -1.8892
0.4581 2.3902	0.4895 2.3287	2452720 +	0.4253 -1.9269	0.4431 -1.8544
0.4814 2.3699	0.5102 2.3334	0.4139 -1.8201	0.4465 -1.9287	0.4996 -1.8151
0.5024 2.3625	0.5311 2.3538	0.4367 -1.8916	0.4684 -1.9181	v-c3
0.5239 2.3888	0.5547 2.2929	0.4581 -1.8620	0.4895 -1.9069	2452720 +
0.5455 2.4322	0.5765 2.3655	0.4814 -1.8592	0.5102 -1.9057	0.4139 -3.3041
0.5715 2.3430	0.5978 2.3587	0.5024 -1.8629	0.5311 -1.9159	0.4367 -3.3683
0.5936 2.3492	0.6218 2.3615	0.5239 -1.8696	0.5547 -1.9395	0.4581 -3.3296
0.6147 2.3364	2452723 +	0.5455 -1.8518	0.5765 -1.8649	0.4814 -3.3268
0.6357 2.3214	0.4072 2.3741	0.5715 -1.8772	0.5978 -1.8384	0.5024 -3.2656
2452721 +	0.4284 2.3750	0.5936 -1.8804	0.6218 -1.8203	0.5239 -3.1016
0.4187 2.3564	0.4517 2.3641	0.6147 -1.8932	2452723 +	0.5455 -3.2479
0.4413 2.3424	0.4753 2.3664	0.6357 -1.9098	0.4072 -1.8476	0.5715 -3.3185
0.4631 2.3292	0.4959 2.3612	2452721 +	0.4284 -1.8585	0.5936 -3.3284
0.4841 2.2778	0.5165 2.3559	0.4187 -1.8645	0.4517 -1.8533	0.6147 -3.3564
0.5100 2.2878	0.5385 2.3393	0.4413 -1.8785	0.4753 -1.8570	0.6357 -3.3854
0.5549 2.3322	0.5602 2.2231	0.4631 -1.8997	0.4959 -1.8720	2452721 +
0.5802 2.2868	0.5812 2.3025	0.4841 -1.9322	0.5165 -1.9721	0.4187 -3.3394
0.6019 2.2536	0.6021 2.2992	0.5100 -1.9717	0.5385 -1.9501	0.4413 -3.3530
0.6223 2.3145	0.6242 2.2719	0.5549 -1.9494	0.5602 -1.9709	0.4631 -3.3838
0.6426 2.3296	2452724 +	0.5802 -1.9060	0.5812 -2.1794	0.4841 -3.3802

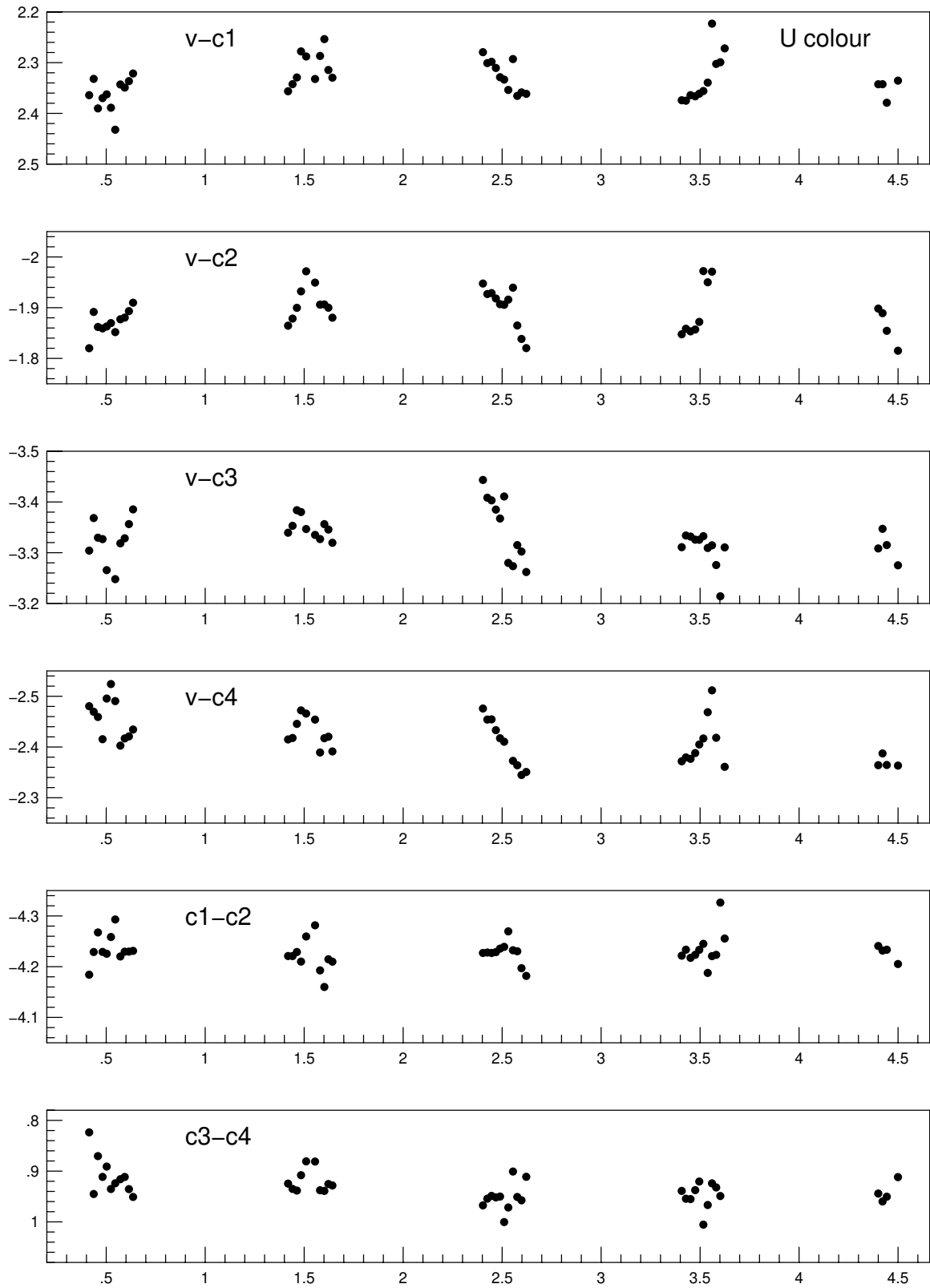


Figure 99: Light curves of 8 Draconis to the comparison stars c1, c2, c3, c4 in U colour. The $c1-c2$ and $c3-c4$ comparisons are also printed.

0.5100 -3.3467	0.4581 -2.4592	0.5385 -2.4686	0.4895 -4.2356	0.4413 0.9351
0.5549 -3.3351	0.4814 -2.4154	0.5602 -2.5117	0.5102 -4.2391	0.4631 0.9383
0.5802 -3.3269	0.5024 -2.4955	0.5812 -2.4182	0.5311 -4.2696	0.4841 0.9080
0.6019 -3.3563	0.5239 -2.5241	0.6021 -2.5793	0.5547 -4.2324	0.5100 0.8808
0.6223 -3.3457	0.5455 -2.4905	0.6242 -2.3609	0.5765 -4.2304	0.5549 0.8811
0.6426 -3.3196	0.5715 -2.4027	2452724 +	0.5978 -4.1970	0.5802 0.9377
2452722 +	0.5936 -2.4169	0.3999 -2.3642	0.6218 -4.1818	0.6019 0.9390
0.4030 -3.4434	0.6147 -2.4209	0.4216 -2.3873	2452723 +	0.6223 0.9254
0.4253 -3.4084	0.6357 -2.4345	0.4431 -2.3646	0.4072 -4.2217	0.6426 0.9283
0.4465 -3.4032	2452721 +	0.4996 -2.3634	0.4284 -4.2335	2452722 +
0.4684 -3.3850	0.4187 -2.4149	c1-c2	0.4517 -4.2174	0.4030 0.9675
0.4895 -3.3674	0.4413 -2.4178	2452720 +	0.4753 -4.2234	0.4253 0.9543
0.5102 -3.4108	0.4631 -2.4456	0.4139 -4.1842	0.4959 -4.2332	0.4465 0.9488
0.5311 -3.2799	0.4841 -2.4722	0.4367 -4.2289	0.5165 -4.2450	0.4684 0.9518
0.5547 -3.2735	0.5100 -2.4659	0.4581 -4.2675	0.5385 -4.1877	0.4895 0.9501
0.5765 -3.3150	0.5549 -2.4540	0.4814 -4.2291	0.5602 -4.2208	0.5102 1.0004
0.5978 -3.3023	0.5802 -2.3892	0.5024 -4.2255	0.5812 -4.2233	0.5311 0.9717
0.6218 -3.2619	0.6019 -2.4173	0.5239 -4.2585	0.6021 -4.3263	0.5547 0.9008
2452723 +	0.6223 -2.4203	0.5455 -4.2930	0.6242 -4.2555	0.5765 0.9510
0.4072 -3.3109	0.6426 -2.3913	0.5715 -4.2201	2452724 +	0.5978 0.9575
0.4284 -3.3339	2452722 +	0.5936 -4.2296	0.3999 -4.2408	0.6218 0.9112
0.4517 -3.3318	0.4030 -2.4759	0.6147 -4.2297	0.4216 -4.2317	2452723 +
0.4753 -3.3257	0.4253 -2.4541	0.6357 -4.2312	0.4431 -4.2334	0.4072 0.9390
0.4959 -3.3255	0.4465 -2.4545	2452721 +	0.4996 -4.2052	0.4284 0.9544
0.5165 -3.3326	0.4684 -2.4332	0.4187 -4.2210	c3-c4	0.4517 0.9551
0.5385 -3.3093	0.4895 -2.4173	0.4413 -4.2209	2452720 +	0.4753 0.9375
0.5602 -3.3146	0.5102 -2.4104	0.4631 -4.2289	0.4139 0.8236	0.4959 0.9205
0.5812 -3.2757	0.5311 -2.2085	0.4841 -4.2100	0.4367 0.9451	0.5165 1.0055
0.6021 -3.2141	0.5547 -2.3727	0.5100 -4.2595	0.4581 0.8704	0.5385 0.9668
0.6242 -3.3105	0.5765 -2.3640	0.5549 -4.2816	0.4814 0.9114	0.5602 0.9241
2452724 +	0.5978 -2.3448	0.5802 -4.1927	0.5024 0.8910	0.5812 0.9322
0.3999 -3.3084	0.6218 -2.3508	0.6019 -4.1600	0.5239 0.9352	0.6021 0.9491
0.4216 -3.3471	2452723 +	0.6223 -4.2146	0.5455 0.9240	0.6242 1.0953
0.4431 -3.3151	0.4072 -2.3718	0.6426 -4.2099	0.5715 0.9159	2452724 +
0.4996 -3.2752	0.4284 -2.3795	2452722 +	0.5936 0.9115	0.3999 0.9442
v-c4	0.4517 -2.3767	0.4030 -4.2270	0.6147 0.9355	0.4216 0.9598
2452720 +	0.4753 -2.3881	0.4253 -4.2279	0.6357 0.9509	0.4431 0.9504
0.4139 -2.4805	0.4959 -2.4050	0.4465 -4.2270	2452721 +	0.4996 0.9118
0.4367 -2.4695	0.5165 -2.4169	0.4684 -4.2287	0.4187 0.9246	

Table 144. The differential data of 8 Draconis in R colour

R colour	0.4384 1.2055	0.5256 1.2113	0.6163 1.2517	0.4430 1.2565
v-c1	0.4598 1.3427	0.5472 1.2323	0.6374 1.2478	0.4648 1.2404
2452720 +	0.4830 1.2764	0.5732 1.2608	2452721 +	0.4858 1.2227
0.4156 1.1969	0.5041 1.2723	0.5953 1.2638	0.4204 1.2621	0.5116 1.2097

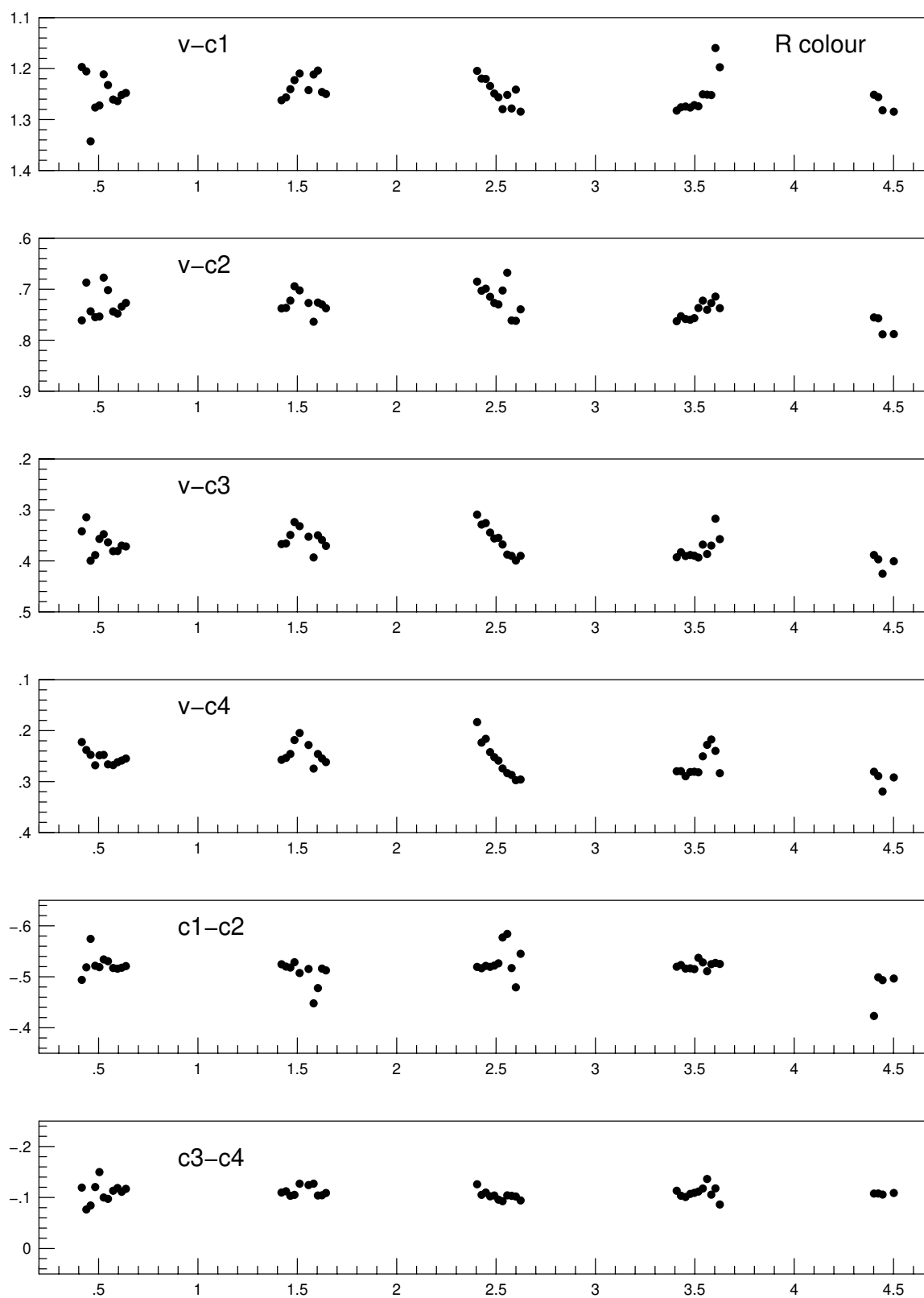


Figure 100: Light curves of 8 Draconis to the comparison stars c1, c2, c3, c4 in R colour. The c1–c2 and c3–c4 comparisons are also printed.

0.5565 1.2423	2452721 +	0.5256 0.3476	2452720 +	2452724 +
0.5819 1.2116	0.4204 0.7376	0.5472 0.3635	0.4156 0.2225	0.4016 0.2807
0.6035 1.2039	0.4430 0.7365	0.5732 0.3809	0.4384 0.2380	0.4232 0.2891
0.6240 1.2460	0.4648 0.7223	0.5953 0.3806	0.4598 0.2475	0.4448 0.3195
0.6441 1.2499	0.4858 0.6941	0.6163 0.3699	0.4830 0.2680	0.5013 0.2918
2452722 +	0.5116 0.7022	0.6374 0.3716	0.5041 0.2485	c1-c2
0.4047 1.2045	0.5565 0.7269	2452721 +	0.5256 0.2476	2452720 +
0.4270 1.2197	0.5819 0.7637	0.4204 0.3670	0.5472 0.2662	0.4156 -0.4939
0.4482 1.2203	0.6035 0.7261	0.4430 0.3657	0.5732 0.2677	0.4384 -0.5186
0.4701 1.2343	0.6240 0.7299	0.4648 0.3491	0.5953 0.2620	0.4598 -0.5744
0.4912 1.2490	0.6441 0.7373	0.4858 0.3238	0.6163 0.2587	0.4830 -0.5216
0.5119 1.2563	2452722 +	0.5116 0.3318	0.6374 0.2548	0.5041 -0.5189
0.5328 1.2796	0.4047 0.6850	0.5565 0.3525	2452721 +	0.5256 -0.5341
0.5564 1.2517	0.4270 0.7029	0.5819 0.3932	0.4204 0.2573	0.5472 -0.5306
0.5782 1.2783	0.4482 0.6989	0.6035 0.3498	0.4430 0.2535	0.5732 -0.5172
0.5995 1.2413	0.4701 0.7148	0.6240 0.3589	0.4648 0.2458	0.5953 -0.5159
0.6235 1.2845	0.4912 0.7269	0.6441 0.3705	0.4858 0.2185	0.6163 -0.5178
2452723 +	0.5119 0.7299	2452722 +	0.5116 0.2047	0.6374 -0.5210
0.4089 1.2825	0.5328 0.7024	0.4047 0.3093	0.5565 0.2282	2452721 +
0.4301 1.2760	0.5564 0.6676	0.4270 0.3287	0.5819 0.2745	0.4204 -0.5246
0.4534 1.2745	0.5782 0.7612	0.4482 0.3258	0.6035 0.2459	0.4430 -0.5200
0.4770 1.2765	0.5995 0.7620	0.4701 0.3444	0.6240 0.2546	0.4648 -0.5181
0.4976 1.2717	0.6235 0.7394	0.4912 0.3560	0.6441 0.2617	0.4858 -0.5286
0.5181 1.2740	2452723 +	0.5119 0.3547	2452722 +	0.5116 -0.5074
0.5402 1.2506	0.4089 0.7627	0.5328 0.3678	0.4047 0.1833	0.5565 -0.5154
0.5619 1.2512	0.4301 0.7529	0.5564 0.3876	0.4270 0.2235	0.5819 -0.4479
0.5829 1.2520	0.4534 0.7584	0.5782 0.3902	0.4482 0.2161	0.6035 -0.4778
0.6038 1.1597	0.4770 0.7598	0.5995 0.3993	0.4701 0.2422	0.6240 -0.5161
0.6259 1.1974	0.4976 0.7567	0.6235 0.3901	0.4912 0.2521	0.6441 -0.5126
2452724 +	0.5181 0.7368	2452723 +	0.5119 0.2589	2452722 +
0.4016 1.2514	0.5402 0.7224	0.4089 0.3929	0.5328 0.2743	0.4047 -0.5194
0.4232 1.2560	0.5619 0.7403	0.4301 0.3830	0.5564 0.2834	0.4270 -0.5168
0.4448 1.2819	0.5829 0.7271	0.4534 0.3904	0.5782 0.2870	0.4482 -0.5214
0.5013 1.2846	0.6038 0.7144	0.4770 0.3884	0.5995 0.2973	0.4701 -0.5195
v-c2	0.6259 0.7371	0.4976 0.3898	0.6235 0.2959	0.4912 -0.5220
2452720 +	2452724 +	0.5181 0.3934	2452723 +	0.5119 -0.5264
0.4156 0.7611	0.4016 0.7553	0.5402 0.3680	0.4089 0.2797	0.5328 -0.5771
0.4384 0.6869	0.4232 0.7570	0.5619 0.3865	0.4301 0.2795	0.5564 -0.5841
0.4598 0.7433	0.4448 0.7885	0.5829 0.3699	0.4534 0.2895	0.5782 -0.5171
0.4830 0.7548	0.5013 0.7880	0.6038 0.3172	0.4770 0.2813	0.5995 -0.4793
0.5041 0.7535	v-c3	0.6259 0.3573	0.4976 0.2807	0.6235 -0.5451
0.5256 0.6772	2452720 +	2452724 +	0.5181 0.2818	2452723 +
0.5472 0.7017	0.4156 0.3419	0.4016 0.3884	0.5402 0.2504	0.4089 -0.5197
0.5732 0.7436	0.4384 0.3144	0.4232 0.3969	0.5619 0.2279	0.4301 -0.5231
0.5953 0.7479	0.4598 0.3996	0.4448 0.4252	0.5829 0.2174	0.4534 -0.5161
0.6163 0.7340	0.4830 0.3885	0.5013 0.4007	0.6038 0.2398	0.4770 -0.5166
0.6374 0.7268	0.5041 0.3568	v-c4	0.6259 0.2835	0.4976 -0.5151

0.5181 -0.5372	0.4156 -0.1194	0.4430 -0.1122	0.4701 -0.1022	0.4976 -0.1091
0.5402 -0.5282	0.4384 -0.0764	0.4648 -0.1033	0.4912 -0.1039	0.5181 -0.1116
0.5619 -0.5109	0.4598 -0.0843	0.4858 -0.1052	0.5119 -0.0958	0.5402 -0.1176
0.5829 -0.5248	0.4830 -0.1205	0.5116 -0.1270	0.5328 -0.0927	0.5619 -0.1363
0.6038 -0.5272	0.5041 -0.1498	0.5565 -0.1243	0.5564 -0.1042	0.5829 -0.1055
0.6259 -0.5252	0.5256 -0.1000	0.5819 -0.1271	0.5782 -0.1032	0.6038 -0.1178
2452724 +	0.5472 -0.0973	0.6035 -0.1039	0.5995 -0.1019	0.6259 -0.0862
0.4016 -0.4231	0.5732 -0.1132	0.6240 -0.1043	0.6235 -0.0942	2452724 +
0.4232 -0.4990	0.5953 -0.1186	0.6441 -0.1088	2452723 +	0.4016 -0.1077
0.4448 -0.4934	0.6163 -0.1112	2452722 +	0.4089 -0.1132	0.4232 -0.1078
0.5013 -0.4966	0.6374 -0.1169	0.4047 -0.1259	0.4301 -0.1035	0.4448 -0.1057
c3-c4	2452721 +	0.4270 -0.1052	0.4534 -0.1009	0.5013 -0.1088
2452720 +	0.4204 -0.1097	0.4482 -0.1097	0.4770 -0.1070	

Table 145. The differential data of 8 Draconis in *I* colour

I colour	0.4918 1.0963	0.5046 1.1898	2452723 +	2452721 +
v-c1	0.5124 1.0975	0.5262 1.2605	0.4094 1.2653	0.4209 1.0206
2452720 +	0.5334 1.1124	0.5477 1.2476	0.4307 1.2619	0.4436 1.0288
0.4162 1.0297	0.5570 1.0958	0.5738 1.2543	0.4539 1.2622	0.4654 1.0166
0.4390 1.0290	0.5787 1.1130	0.5958 1.2549	0.4776 1.2659	0.4863 0.9990
0.4604 1.1459	0.6001 1.1106	0.6169 1.2452	0.4982 1.2660	0.5121 0.9931
0.4836 1.1113	0.6240 1.0934	0.6379 1.2387	0.5187 1.2417	0.5571 1.0190
0.5046 1.1133	2452723 +	2452721 +	0.5408 1.2375	0.5824 1.0654
0.5262 1.0130	0.4094 1.1132	0.4209 1.2447	0.5624 1.2574	0.6041 1.0098
0.5477 1.1145	0.4307 1.1126	0.4436 1.2504	0.5834 1.2373	0.6245 1.0192
0.5738 1.1031	0.4539 1.1107	0.4654 1.2421	0.6043 1.2464	0.6447 1.0376
0.5958 1.1041	0.4776 1.1142	0.4863 1.2224	0.6264 1.2446	2452722 +
0.6169 1.0910	0.4982 1.1139	0.5121 1.2214	2452724 +	0.4053 0.9853
0.6379 1.0798	0.5187 1.1051	0.5571 1.2363	0.4021 1.2404	0.4276 1.0040
2452721 +	0.5408 1.0900	0.5824 1.2804	0.4238 1.2623	0.4488 1.0044
0.4209 1.0982	0.5624 1.0921	0.6041 1.2333	0.4454 1.2844	0.4707 1.0176
0.4436 1.0943	0.5834 1.0267	0.6245 1.2422	0.5019 1.2677	0.4918 1.0258
0.4654 1.0839	0.6043 1.0744	0.6447 1.2575	v-c3	0.5124 1.0216
0.4863 1.0479	0.6264 1.0639	2452722 +	2452720 +	0.5334 1.0623
0.5121 1.0622	2452724 +	0.4053 1.2128	0.4162 1.0269	0.5570 1.0499
0.5571 1.0944	0.4021 1.0717	0.4276 1.2283	0.4390 1.0227	0.5787 1.0498
0.5824 1.0707	0.4238 1.0800	0.4488 1.2261	0.4604 1.0134	0.6001 1.0570
0.6041 1.0833	0.4454 1.0981	0.4707 1.2352	0.4836 1.0461	0.6240 1.0330
0.6245 1.0895	0.5019 1.1440	0.4918 1.2438	0.5046 1.0232	2452723 +
0.6447 1.1012	v-c2	0.5124 1.2440	0.5262 1.0408	0.4094 1.0428
2452722 +	2452720 +	0.5334 1.2051	0.5477 1.0006	0.4307 1.0373
0.4053 1.0601	0.4162 1.2821	0.5570 1.2486	0.5738 1.0385	0.4539 1.0431
0.4276 1.0712	0.4390 1.1999	0.5787 1.2668	0.5958 1.0374	0.4776 1.0467
0.4488 1.0742	0.4604 1.3197	0.6001 1.2673	0.6169 1.0315	0.4982 1.0469
0.4707 1.0822	0.4836 1.2641	0.6240 1.2509	0.6379 1.0220	0.5187 1.0429

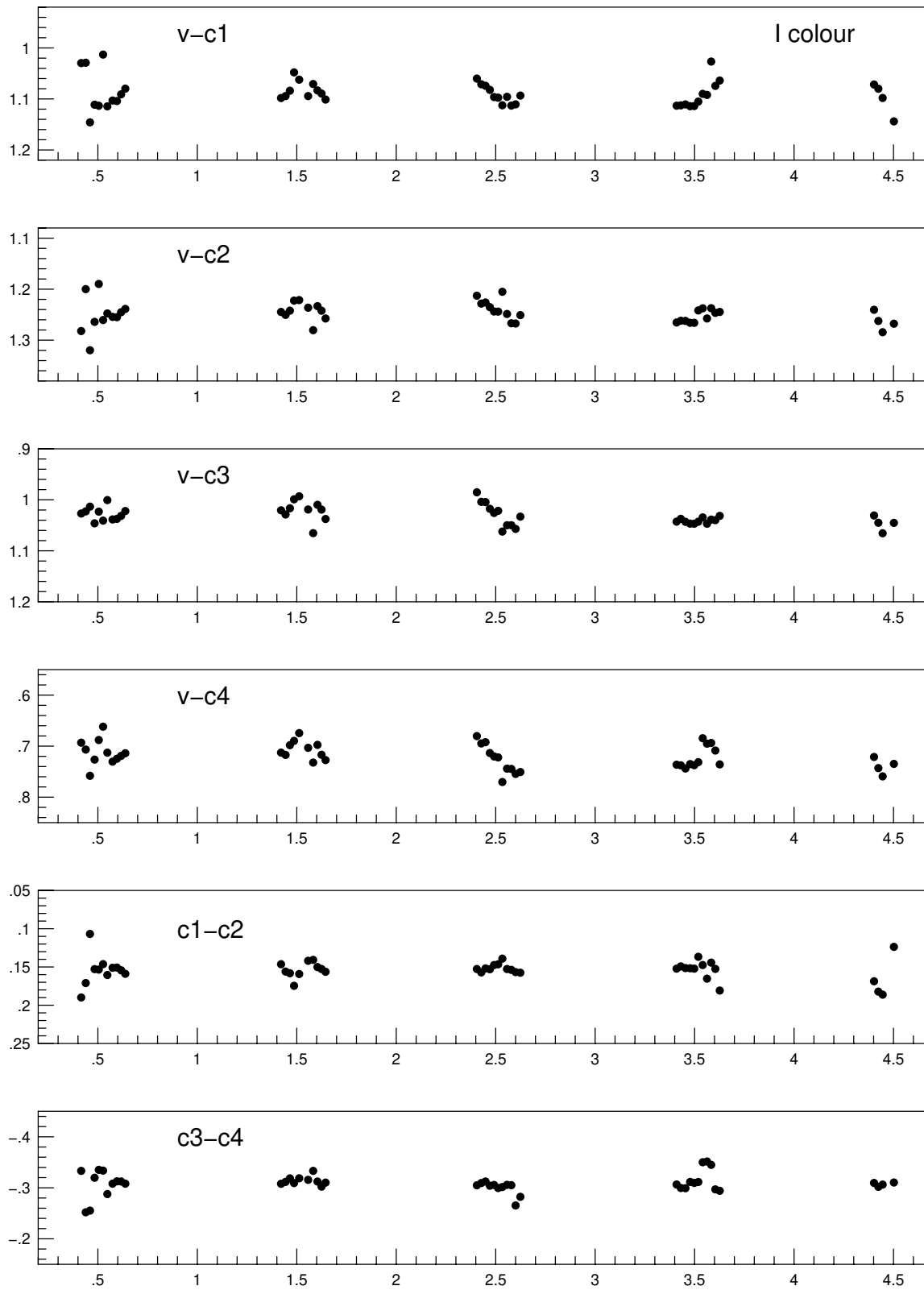


Figure 101: Light curves of 8 Draconis to the comparison stars c1, c2, c3, c4 in *I* colour. The c1–c2 and c3–c4 comparisons are also printed.

0.5408 1.0345	2452722 +	0.4836 0.1528	0.4539 0.1515	0.5824 -0.3332
0.5624 1.0469	0.4053 0.6803	0.5046 0.1534	0.4776 0.1517	0.6041 -0.3123
0.5834 1.0388	0.4276 0.6947	0.5262 0.1463	0.4982 0.1522	0.6245 -0.3023
0.6043 1.0399	0.4488 0.6922	0.5477 0.1605	0.5187 0.1367	0.6447 -0.3102
0.6264 1.0315	0.4707 0.7135	0.5738 0.1511	0.5408 0.1475	2452722 +
2452724 +	0.4918 0.7202	0.5958 0.1508	0.5624 0.1653	0.4053 -0.3049
0.4021 1.0307	0.5124 0.7221	0.6169 0.1543	0.5834 0.1443	0.4276 -0.3093
0.4238 1.0450	0.5334 0.7703	0.6379 0.1589	0.6043 0.1525	0.4488 -0.3123
0.4454 1.0656	0.5570 0.7441	2452721 +	0.6264 0.1808	0.4707 -0.3041
0.5019 1.0452	0.5787 0.7447	0.4209 0.1464	2452724 +	0.4918 -0.3056
v-c4	0.6001 0.7545	0.4436 0.1560	0.4021 0.1687	0.5124 -0.2995
2452720 +	0.6240 0.7507	0.4654 0.1582	0.4238 0.1822	0.5334 -0.3015
0.4162 0.6932	2452723 +	0.4863 0.1746	0.4454 0.1862	0.5570 -0.3058
0.4390 0.7067	0.4094 0.7364	0.5121 0.1592	0.5019 0.1237	0.5787 -0.3051
0.4604 0.7581	0.4307 0.7376	0.5571 0.1419	c3-c4	0.6001 -0.2654
0.4836 0.7264	0.4539 0.7439	0.5824 0.1407	2452720 +	0.6240 -0.2823
0.5046 0.6880	0.4776 0.7352	0.6041 0.1501	0.4162 -0.3332	2452723 +
0.5262 0.6619	0.4982 0.7374	0.6245 0.1527	0.4390 -0.2520	0.4094 -0.3065
0.5477 0.7128	0.5187 0.7315	0.6447 0.1563	0.4604 -0.2553	0.4307 -0.2996
0.5738 0.7304	0.5408 0.6845	2452722 +	0.4836 -0.3197	0.4539 -0.2992
0.5958 0.7247	0.5624 0.6952	0.4053 0.1527	0.5046 -0.3352	0.4776 -0.3115
0.6169 0.7191	0.5834 0.6938	0.4276 0.1571	0.5262 -0.3337	0.4982 -0.3095
0.6379 0.7139	0.6043 0.7086	0.4488 0.1519	0.5477 -0.2877	0.5187 -0.3114
2452721 +	0.6264 0.7358	0.4707 0.1530	0.5738 -0.3081	0.5408 -0.3501
0.4209 0.7127	2452724 +	0.4918 0.1475	0.5958 -0.3127	0.5624 -0.3516
0.4436 0.7172	0.4021 0.7212	0.5124 0.1465	0.6169 -0.3124	0.5834 -0.3450
0.4654 0.6981	0.4238 0.7431	0.5334 0.1391	0.6379 -0.3081	0.6043 -0.2969
0.4863 0.6897	0.4454 0.7593	0.5570 0.1527	2452721 +	0.6264 -0.2941
0.5121 0.6744	0.5019 0.7348	0.5787 0.1538	0.4209 -0.3079	2452724 +
0.5571 0.7033	c1-c2	0.6001 0.1567	0.4436 -0.3116	0.4021 -0.3095
0.5824 0.7322	2452720 +	0.6240 0.1575	0.4654 -0.3185	0.4238 -0.3019
0.6041 0.6975	0.4162 0.1899	2452723 +	0.4863 -0.3093	0.4454 -0.3063
0.6245 0.7169	0.4390 0.1710	0.4094 0.1522	0.5121 -0.3187	0.5019 -0.3104
0.6447 0.7274	0.4604 0.1068	0.4307 0.1492	0.5571 -0.3156	

The archived files are: 8dra-v-c1.arch, 8dra-v-c2.arch, 8dra-v-c3.arch, 8dra-v-c4.arch, 8dra-c1-c2.arch and 8dra-c3-c4.arch. These files contain the data in all colour (*VBURI*). A further investigation for the new details of the pulsation of the γ Dor needs a long timebase. Our observations 23 years ago definitely help to obtain a long timebase, even if there are inaccuracies in these observations compared to today's standards. I only hope that these old observations still have a value for the research field, despite the data flood coming from the space missions of the last years.

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