A MAGYAR
TUDOMÁNYOS AKADÉMIA
CSILLAGVIZSGÁLÓ
INTÉZETÉNEK
KÖZLEMÉNYEI

MITTEILUNGEN
DER
STERNWARTE
DER UNGARISCHEN AKADEMIE
DER WISSENSCHAFTEN

BUDAPEST — SZABADSÁGHEGY

NR. 69.

S. KANYÓ

U, B, V PHOTOMETRY OF THE MULTIPLE PERIODIC RR LYRAE STAR RV URSAE MAIORIS

BUDAPEST, 1976.

Felelős kiadó: Szeidl Béla

768110 MTA KESZ Sokszorosító. F. v.: Szabó Gyula

U,B,V PHOTOMETRY OF THE MULTIPLE PERIODIC RR LYRAE STAR RV URSAE MAIORIS

SUMMARY

Three-colour photoelectric photometry of the RR_{ab} variable star RV Ursae Maioris, is presented. Period and total light curve changes of the star during the Blazhko period and O-C diagrams of both the main and the secondary periods are investigated. It was found that a certain phase point / φ_s=0,94/ of the ascending branches of the light curves showed no oscillation during the Blazhko period, which is hardly compatible with the assumption of the superposition of beat periods. A long cycle of 6-8 years in the O-C variations of the ascending branch was also found. Similar long cycle variations are shown by other RR Lyrae stars exhibiting the Blazhko effect, this variation being reminiscent of the solar magnetic cycle.

INTRODUCTION

RV Ursae Maioris is an RRab Lyrae variable star whose light variation was among the firsts discovered. The variability of RV UMa was announced by Cerasky in 1907 /Cerasky 1907/, and its light elements were derived by Blazhko /1908/. According to the properties of the observed light curve and the period /$P=0^d.4684$/ Blazhko classified the star as a short periodic δ Ceph variable. In 1920, Jordan and Subbotin pointed out independently the strong variation of the light curve of RV UMa /Jordan, 1920; Subbotin, 1927/

Photographic observations of RV UMa were initiated at the Konkoly Observatory by Julia Baláżs and Detre with a 16 cm astrograph in 1936. A great number of observations were made in Budapest confirming the existence of a Blazhko effect, however, the secondary period could not be determined until photoelectric observations were made by Balázs and Detre in 1956-1957. Using all published observations they derived for the secondary period $P_s=90^d.8$. They constructed O-C diagrams for both the fundamental and the secondary period over a time interval of 50 years.

According to Preston the spectral type of RV UMa at minimum light is F4 from H-lines and A6 from the CaII-line giving $\Delta S=8$ /Preston, 1959/. On 34 nights in 1959 and 1960 Preston obtained a total of 113 spectrograms of the star; with the X-spectrograph of the Mount Wilson 60-inch reflector concurrently Spinrad carried out photoelectric observations on the UBV system with the 20-inch reflector of the Leushner Observatory in Berkeley. In addition four light rises were observed by Preston with the 60-inch reflector in 1960. They used these series of photoelectric and spectroscopic observations to point out some peculiarities in the 90-day cycle /Preston and Spinrad, 1967/.

THE PHOTOELECTRIC OBSERVATIONS

The present author observed RV UMa photoelectrically during the period 1961-1969, at first in yellow and blue, later also in ultraviolet light. Additional measurements were obtained by Csank, Gefferth and Lovas on the B, V system in 1958-59. The observations ranged over all phases of the primary and

secondary periods. In this way it was possible to study the variations of complete light- and colour-curves in the 90-day cycle.

The distribution of the observations is listed in Table I.

Table I

Year	Number of nights	Number of observations			
		Yellow	Blune	Ultra-violet	Total
1958	6	69	69	-	138
1959	10	138	138	-	276
1976	50	1356	1356	-	2712
1962	47	593	593	562	1748
1963	17	26	275	275	576
1964	15	110	110	110	330
1965	1	16	16	-	32
1968	2	33	33	14	80
1969	2	37	37	-	74
Total	150	2378	2627	961	5966

All observations were made with the 24-inch reflector of the Konkoly Observatory. The unrefrigerated photometer employed was equipped with an RCA 1P21 photomultiplier up to 1961, after that time with an EMI 9502B phototube.

The following filters were used

Colour	Type	λ eff
yellow	Schott GG 11	5600 Å
blue	" BG 12+GG 13	4300 Å
ultraviolet	" UG 1	3950 Å

The photomultiplier output was amplified by a d.c. amplifier. The linearity of the instrument seemed to be warranted within the mesaurring interval.

The comparison star for our observations was the visual double star BD+55°1616. Spinrad used the same comparison star while BD + 54° 1610, used by Preston as a comparison star, was chosen as the check star. Both stars are within 20' to the variable. The photoelectric data for these stars were adopted from the measurements of Preston and Spinrad /Table II/.

Table II

	V	B-V	U - B
BD+55°1616	9.963	+ 0.507	- 0.114
BD+54°1610	9.62	+ 0.580	+ 0.095

Observations of standard stars published by Johnson and Morgan /1953/ were used to transfer the differential magnitudes and colours from the instrumental system u,b,v to the international U, B, V system by the formulae:

$$\Delta V = \Delta v + \Delta/B-V/ \quad /1/$$
$$\Delta/B-V/ = \mu\,\Delta/b-v/ \quad /2/$$
$$\Delta/U-B/ = \psi\,\Delta/u-b/ \quad /3/$$

The values of the coefficients were determined from time to time, though not frequently enough to be able to trace small variations caused by variability of sky transparency. Therefere, only the most significant variations of the coefficients were taken into account - specially that due to a transition from a silvered mirror to an aluminized one in 1961. Beginning with 1963 we have obtained sufficient data for the coefficients. The different sets of these coefficients are given in Table III, while the reduced observations are listed in Table IV.

Table III

Time interval		ε	μ	ψ
From feb.	1958			
to May	1963	- 0,132	1,05	1,08
	1964	- 0,14	1,12	1,16
Apr.	1965	- 0,136	1,17	1,09
January	1968	- 0,166	1,208	1,10
March	1968	- 0,156	1,152	1,00
January	1969	- 0,130	1,194	1,02
May	1969	- 0,177	1,181	0,955

LIGHT - CURVE VARIATIONS

The main purpose of this investigation was to study the variations of the light curve in V and the B-V and U-B colour curves in the 90 -day cycle for all phases / φ / of the $0^d.468$ period. However the observations were concentrated on the phases φ = 0,85 - 0,05, i. e. on the minimum ascending branch and maximum of the light curve. Some individual V, B-V and U-B curves for these phases are represented in Fig. 1. To obtain complete light curves for all phases /the phase of highest maximum being taken as ψ=0/ of the 90^d secondary period the same procedure was applied as by Julia Balázs and Detre /1939/ for AR Herculis. From the observed light curves the magnitudes were read off for a set of φ - phases and these magnitudes were then plotted versus ψ . In this way we obtained a sequence of curves representing the variation in the light curve for definite φ-phases as a function of ψ .

For derivation of proper φ and ψ-values the O-C diagrams must first be constructed for both the fundamental and secondary period. For C, the elements of Balázs and Detre /1957/ were used, viz.

/J.D. /maximum light/ = 2417861, $4292+0^d,468063203$ E /I/

and

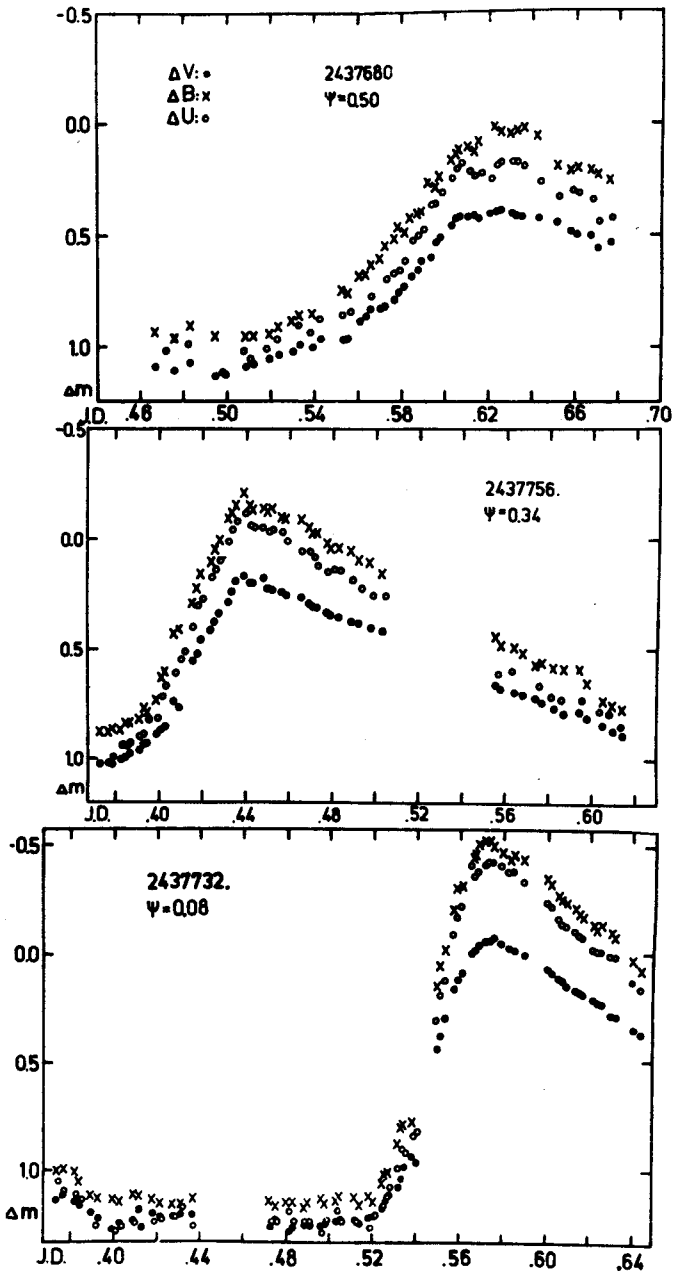

Figure 1 The observed light curves in UBV according to different phase points of Blazhko period.

J. D. /brightest maximum/ = 2418060 + 90,12 x N. /II/ where E and N are epoch counts in the respective periods. For each year the actual fundamental and secondary periods were determined by using the O-C /I/ and O-C /II/ curves. For instance the fundamental period obtained for 1961 /when the greatest number of observations were collected/ was

$$P = 2437327,692 + 0^{d},468061103 \cdot E$$

and the secondary period

$$P_s = 2437359 + 92^{d},12 \cdot N.$$

The brightest maxima were chosen from every observational season and are given in Table V. The O-C diagrams constructed for these maxima are shown in Fig 2. They are typical for RR Lyrae stars having a secondary period and their structure can be considered as resulting from the cumulative effects of random period changes. Even so, the comparison of O-C/II/ reveals two important characteristics:

1. The long cycles resulting from cumulative effects of random period changes are opposite in phase in the two diagrams. That is a change in the secondary period is accompanied by an opposite change in the fundamental period.

2. The changes expressed in units of the respective period are much larger for the secondary period than for the main one.

These characteristics are especially conspicuous for RW Draconis and in some respect also for RR Lyrae /see Detre, 1970/. They are considered to be of fundamental importance for the interpretation of the secondary period.

A few $V = V / \phi /_{\varphi = const}$ - diagrams are represented in Fig. 3a. The scatter in V is largely due to the random variations in the periods which makes an exact determination of φ and ϕ impossible. This is proved by the fact that the scatter is largest in the ascending branch, between phases $\varphi =$ = 0,85 to 0,975, which part of the light curve is especially sensitive to random phase variations.

Table V.

Observed maxima

Year	J.D. 2430000+	ΔM^v	ΔM^b	ΔM^{uv}
1958	6229,6	+0,420	+0,120	
	6245,5	+0,290	-0,005	
	6282,5	+0,015	-0,390	
1959	6655,6	+0,085	-0,300	
	6680,4	+0,385	+0,105	
	6684,6	+0,428	+0,100	
	6692,5	+0,372	+0,080	
	6724,4	-0,050	-0,460	
1961	7327,7	+0,335	-0,015	
	7331,4	+0,295	-0,055	
	7339,-	-	-	
	7344,5	+0,060	-0,415	
	7345,5	+0,020	-0,435	
	7360,5	-0,060	-0,640	
	7365,6	-0,045	-0,525	
	7376,4	+0,010	-0,430	
	7395,6	+0,226	-0,175	
	7396,5	+0,255	-0,140	
	7397,4	+0,260	-0,130	
	7404,5	+0,365	-0,025	
	7411,5	+0,410	+0,045	
	7418,5	+0,345	0,00	
	7424,5	+0,260:	-0,150	
	7456.-	-	-	
	7463,4	0,000	-0,470	
1962	7652,5	-0,010	-0,375	-0,380
	7680,6	-0,395	+0,035	+0,175
	7702,6	+0,185	-0,250	-0,125
	7732,6	-0,065	-0,510	-0,420
	7756,4	+0,170	-0,190	-0,110
	7769,5	+0,360	+0,050	-
	7780,3	+0,365:	-0,025	+0,040
	7806,5	-0,010	-0,385	-0,280:
	7808,4	-0,050	-0,445	-0,410
	7815,4	-0,090	-0,500	-0,470
	7829,5	-0,170	-0,560	-0,520:
1963	8003,6	-0,070	-0,500	-0,475
	8019,5	+0,125	-0,265	-0,175
	8047,6	-	+0,130	+0,220
	8085,5	-	-0,450	-0,350
	8086,4	-	-0,445	-0,380
	8090,6	-	-0,400	-0,370
	8114,5	-	-0,138	-0,050
1964	8415,5	+0,325	-0,040	+0,100
	8457,6	-0,090	-0,500	-0,360
	8496,4	+0,350	0,000	+0,135
	8503,5	+0,300	-0,055	+0,115
	8548,4	-0,030	-0,520	-0,340

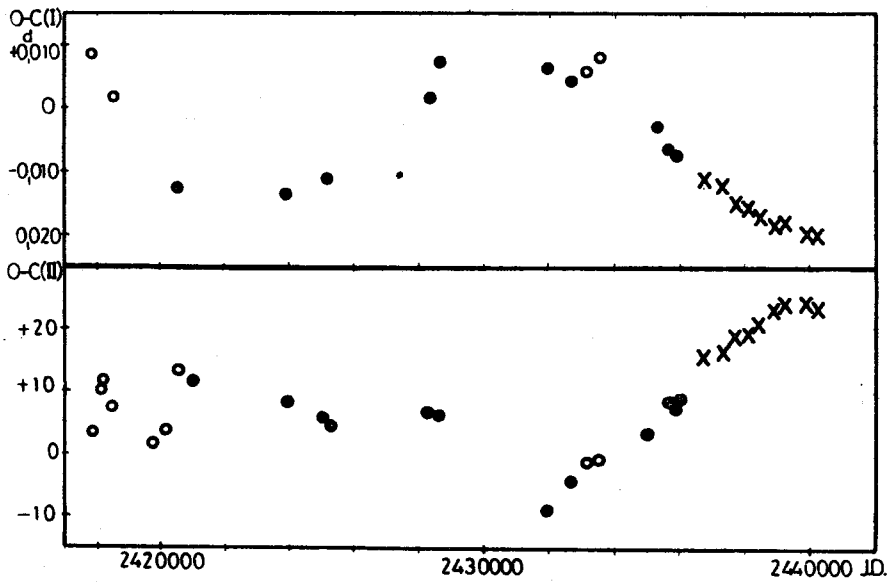

Figure 2
The O-C values for the fundamental O-C/I/ and for the secondary periods O-C/II/

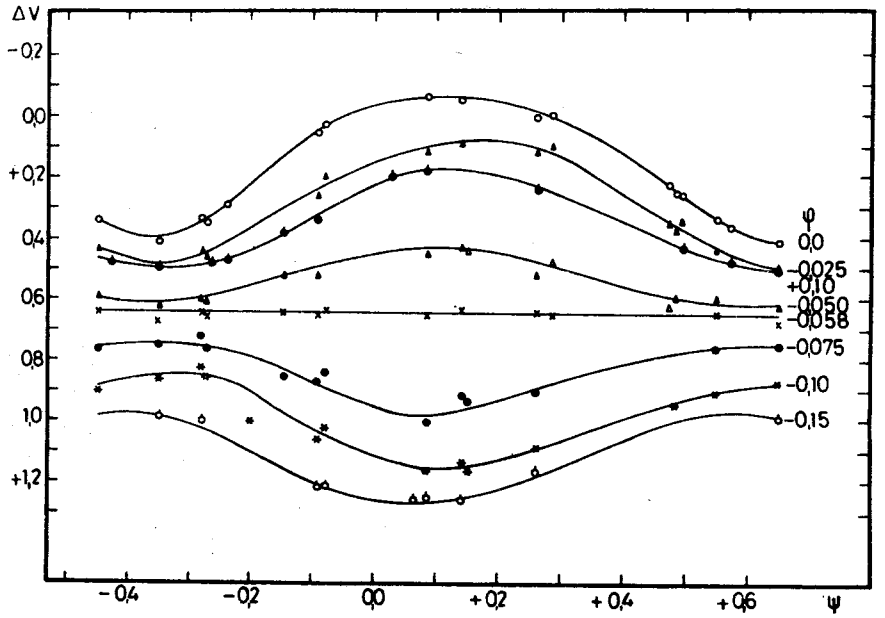

Figure 3a

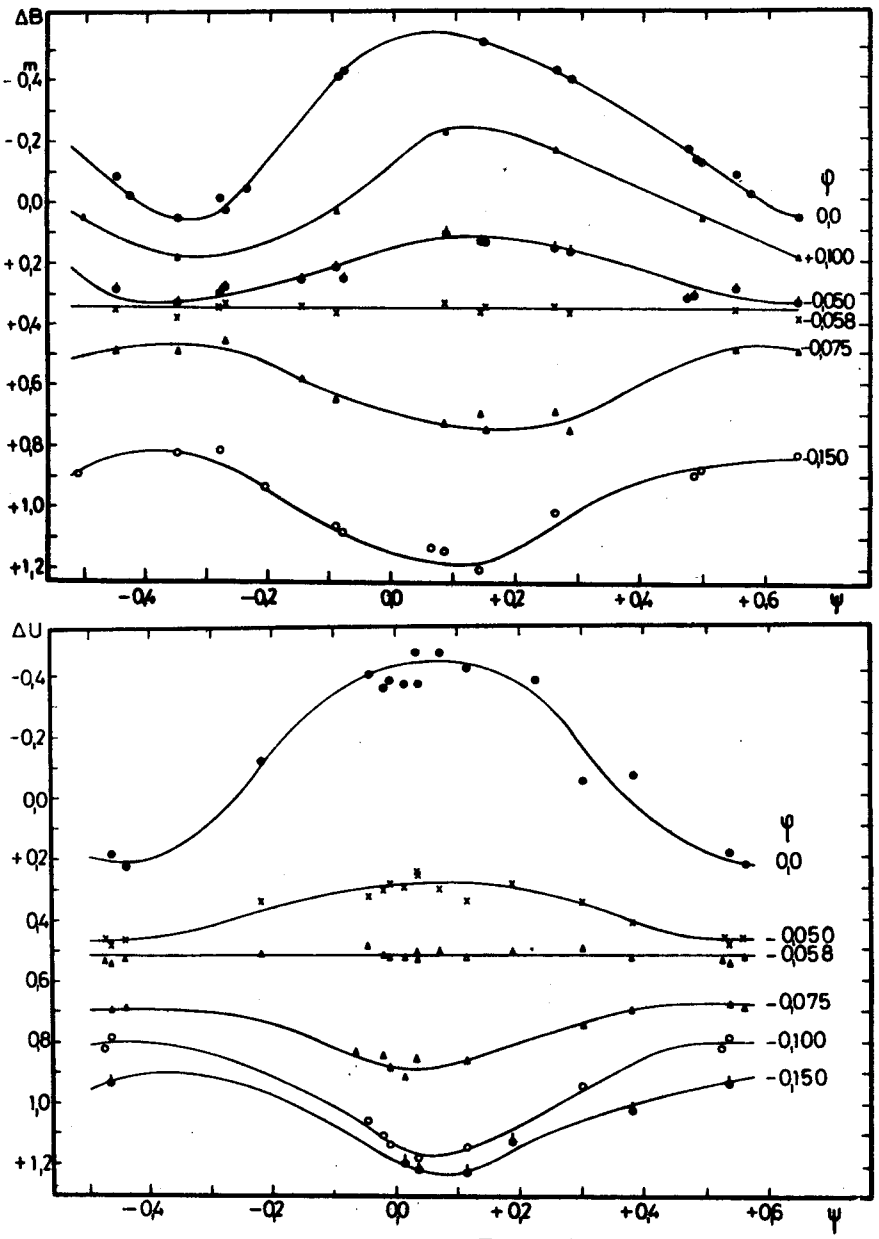

Figure 3

Similar marks on the diagram represent a certain φ phase value of the fundamental period obtained from the light curves of different Blazhko phase ψ . Figures 3a, b, c are in ΔV, ΔB and ΔU respectively.

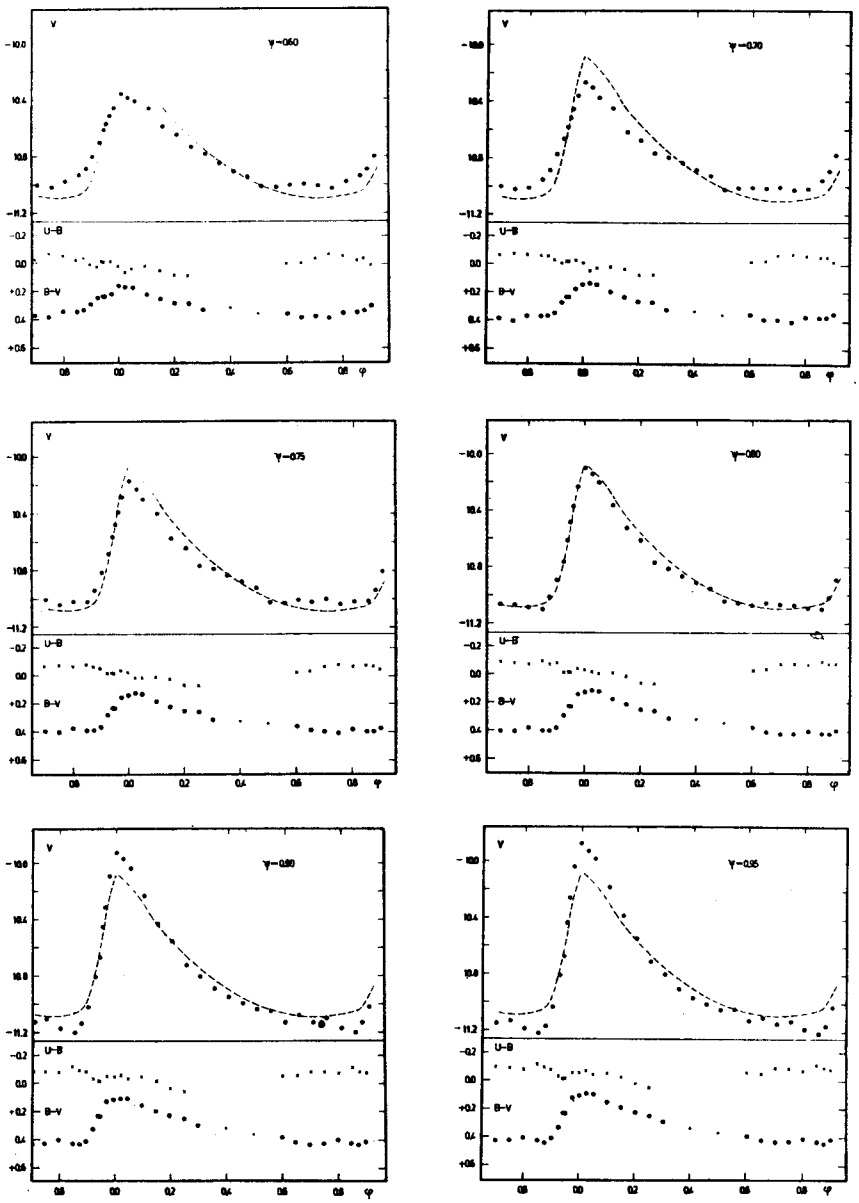

Figure 4
The diagram shows the flattened light curves of different secondary period phase ϕ constructed from figures 3a,b,c.

The same procedure was carried out in B and U, as well /Fig.3b, 3c/ Using these curves the V $/\varphi/_{\psi=const}$, B-V $/\varphi/_{\psi=const}$ and U-B $/\varphi/_{\psi=const}$ diagrams /Figs. 4a and b/ were constructed on which all the following discussions are based.

The two-colour diagrams at different phases of the secondary period are shown in Fig. 5. On the loops the phases of the main period are also indicated. The dashed line is the relation for the main sequence stars.

The V magnitudes and B-V colour indices at minimum light and maximum light and the U-B ranges δ_2/ defined by Preston, Ann. Rew. of Astr. and Astroph. Vol. 2, 1964/ are plotted versus ψ in Fig. 6. The V and B-V ranges are correlated and the values of V are more strongly variable at maximum light than at minimum light as in the case of other RR Lyrae stars with Blazhko effect.

Our photometric results are in good agreement with those obtained by Preston and Spinrad /Ap. J. 147, 1967/. Nevertheless there are some slight differences expecially in the δ_2 values beause accurate observations in U-B could not be made under the unsatisfactory observing conditions near Budapest.

Figures 7a and b show the amplitude variation ΔA of the m/ψ/ curves and the phase ψ of the maxima of the same curves plotted against φ. ΔA have two maxima in each colour. The first of the maxima is at phase $\varphi = 0{,}90$ on the ascending branch and the second one - which is higher, is at the phase of the light maximum /$\varphi = 0{,}00$/. It is evident from the figure that the light curves do not change significantly between the $\varphi = 0{,}35 - 0{,}55$ phase interval during the Blazhko cycle. It is however, rather surprising that there is a very deep minimum at phase 0,94 on the ascending branch between the two maxima mentioned above. This deep minimum indicates that there exists a point on the ascending branch which does not show any significant oscillation during the Blazhko cycle while the ascending branch before and after it and especially the light maximum shows considerable oscillation. It is very interesting to compare our results with those obtained for AR Herculis by Almár /1961/. The same curves obtained for AR Her. also show double maxima but at other phases. The essential difference is that the first maximum of AR Her. is higher than the second one and the deep minimum is situated at the phase of light maximum.

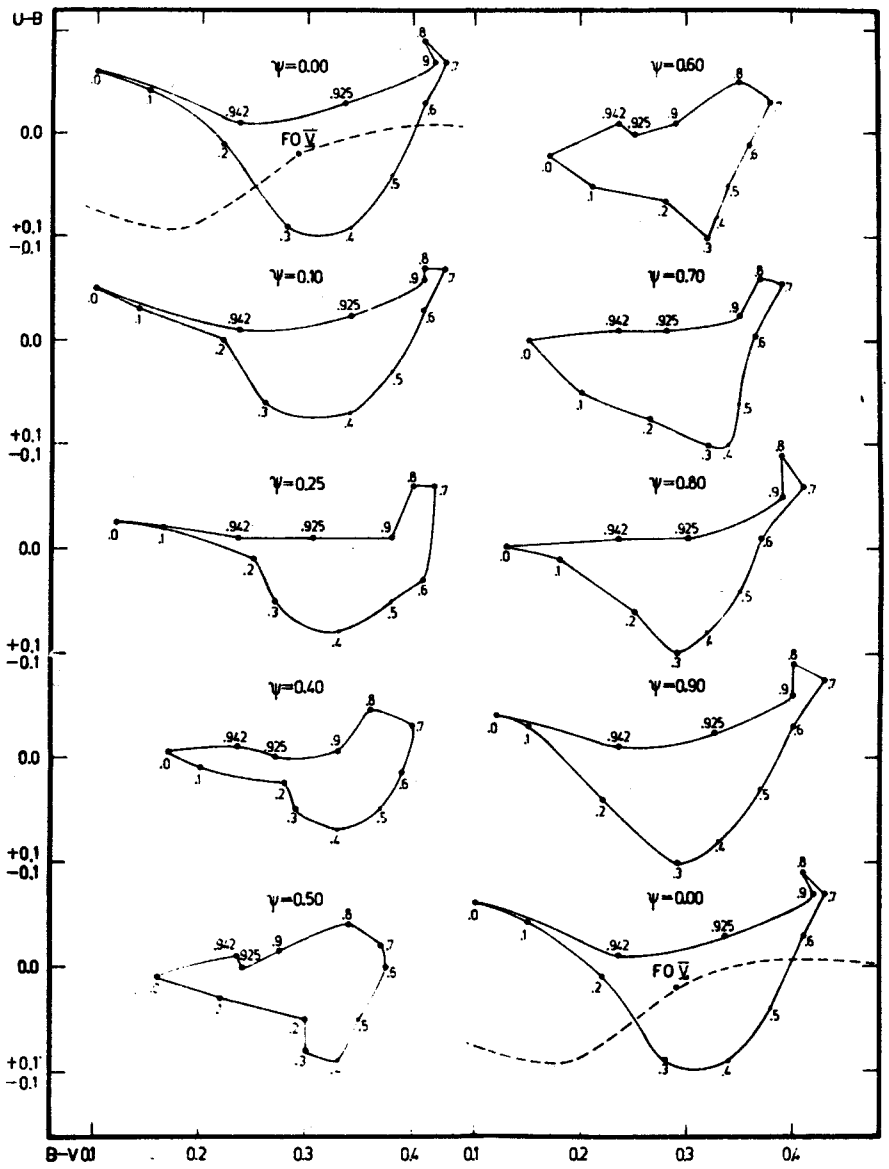

Figure 5
The two-colour diagrams at different phases of the secondary period.
The dashed line represents the main sequence.

Table VI./1

ψ \ φ	0,00	0,025	0,05	0,10	0,15	0,20	0,25	0,60	0,65	0,70	0,75	0,80	0,85	0,875	0,90	0,925	0,942	0,950	0,975	
0,00	-0,050	-0,070	-0,050	-0,045	-0,025	+0,020	+0,040	-0,050	-0,060	-0,090	-0,080	-0,070	-0,100	-0,085	-0,075	-0,030	-0,010	-0,010	-0,050	0,00
0,05	-0,050	-0,065	-0,050	-0,035	-0,025	0,000	+0,030	-0,050	-0,025	-0,090	-0,080	-0,070	-0,090	-0,075	-0,075	-0,025	-0,010	-0,010	-0,050	0,05
0,10	-0,045	-0,060	-0,050	-0,030	-0,020	0,000	+0,015	-0,040	-0,010	-0,085	-0,080	-0,070		-0,065	-0,070	-0,025	-0,010	-0,010	-0,050	0,10
0,25	-0,020	-0,030	-0,035	-0,010	+0,010	+0,020	0,000	0,000	+0,025	-0,070	-0,075	-0,065	-0,020	-0,025	-0,030	-0,010	-0,010	-0,010	-0,030	0,25
0,40	0,000	0,000	0,000	0,000	+0,040	+0,040	+0,010	+0,010	+0,020	-0,040	-0,060	-0,060		-0,010	-0,025	+0,010	-0,010	-0,010	-0,015	0,40
0,50	+0,020	+0,030	+0,020	+0,005	+0,050	+0,060	+0,060	0,030	+0,010	-0,020	-0,050	-0,040		-0,020	-0,025	+0,025	-0,010	-0,010	-0,005	0,50
0,60	+0,020	+0,065	+0,040	+0,025	+0,050	+0,080	+0,080	0,000	0,000	-0,030	-0,060	-0,050	-0,020	-0,035	+0,010	+0,025	-0,010	-0,010	-0,010	0,60
0,70	0,000	+0,050	+0,035	+0,030	+0,040	+0,080	+0,080	-0,010	-0,015	-0,060	-0,065	-0,055	-0,050	-0,050	-0,020	0,000	-0,010	-0,010	-0,020	0,70
0,75	-0,015	+0,020	+0,020	+0,015	+0,030	+0,075	+0,075	-0,020	-0,025	-0,060	-0,070	-0,060	-0,070	-0,060	-0,040	-0,010	-0,010	-0,010	-0,030	0,75
0,80	-0,025	-0,010	0,000	-0,005	+0,015	+0,070	+0,070	-0,030	-0,035	-0,070	-0,075	-0,065	-0,090	-0,070	-0,070		-0,010	-0,010	-0,035	0,80
0,90	-0,040	-0,050	-0,030	-0,045	-0,010	+0,040	+0,060	-0,050	-0,050	-0,085	-0,080	-0,070	-0,110	-0,085	-0,075	-0,025	-0,010	-0,010	-0,045	0,90
0,95	-0,050	-0,065	-0,040	-0,045	-0,020	+0,030	+0,050	-0,060	-0,050	-0,090	-0,085	-0,075	-0,110	-0,090	-0,075	-0,025	-0,010	-0,010	-0,050	0,95

Table VI./2

ψ \ φ	0,00	0,025	0,05	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,65	0,70	0,75	0,80	0,85	0,875	0,90	0,925	0,942	0,950	0,975	
0,00	0,100	0,100	0,090	0,150	0,185	0,220	0,240	0,280	0,339	0,387	0,395	0,420	0,430	0,435	0,410	0,430	0,440	0,420	0,335	0,235	0,235	0,125	0,00
0,05	0,90	0,095	0,085	0,150	0,185	0,220	0,240	0,275	0,345	0,384	0,400	0,420	0,435	0,440	0,415	0,430	0,435	0,420	0,340	0,235	0,235	0,125	0,05
0,10	0,090	0,095	0,080	0,150	0,180	0,220	0,240	0,260	0,345	0,382	0,400	0,420	0,435	0,400	0,415	0,430	0,430	0,415	0,340	0,235	0,235	0,125	0,10
0,25	0,120	0,115	0,125	0,165	0,205	0,250	0,270	0,270	0,353	0,360	0,410	0,410	0,425	0,425	0,400	0,415	0,395	0,380	0,305	0,235	0,235	0,150	0,25
0,40	0,160	0,160	0,180	0,200	0,260	0,315	0,300	0,285	0,366	0,344	0,390	0,400	0,390	0,400	0,360	0,375	0,350	0,330	0,250	0,235	0,235	0,205	0,40
0,50	0,170	0,175	0,185	0,225	0,260	0,300	0,300	0,310	0,338	0,350	0,375	0,370	0,360	0,380	0,340	0,360	0,315	0,275	0,230	0,235	0,235	0,240	0,50
0,60	0,160	0,165	0,170	0,220	0,250	0,280	0,280	0,325	0,313	0,355	0,350	0,380	0,370	0,385	0,345	0,345	0,330	0,290	0,245	0,235	0,235	0,215	0,60
0,70	0,150	0,140	0,150	0,200	0,235	0,265	0,270	0,325	0,322	0,348	0,355	0,390	0,390	0,405	0,370	0,375	0,370	0,350	0,275	0,235	0,235	0,180	0,70
0,75	0,145	0,130	0,135	0,190	0,225	0,255	0,260	0,320	0,326	0,337	0,360	0,390	0,400	0,410	0,380	0,395	0,395	0,370	0,285	0,235	0,235	0,160	0,75
0,80	0,135	0,120	0,125	0,180	0,215	0,250	0,260	0,310	0,314	0,340	0,370	0,400	0,415	0,415	0,390	0,410	0,410	0,390	0,300	0,235	0,235	0,150	0,80
0,90	0,120	0,110	0,110	0,160	0,200	0,230	0,250	0,300	0,322	0,360	0,380	0,415	0,435	0,425	0,400	0,425	0,435	0,410	0,325	0,235	0,235	0,130	0,90
0,95	0,110	0,100	0,100	0,155	0,195	0,225	0,250	0,290	0,340	0,367	0,390	0,420	0,430	0,430	0,410	0,430	0,445	0,415	0,335	0,235	0,235	0,125	0,95

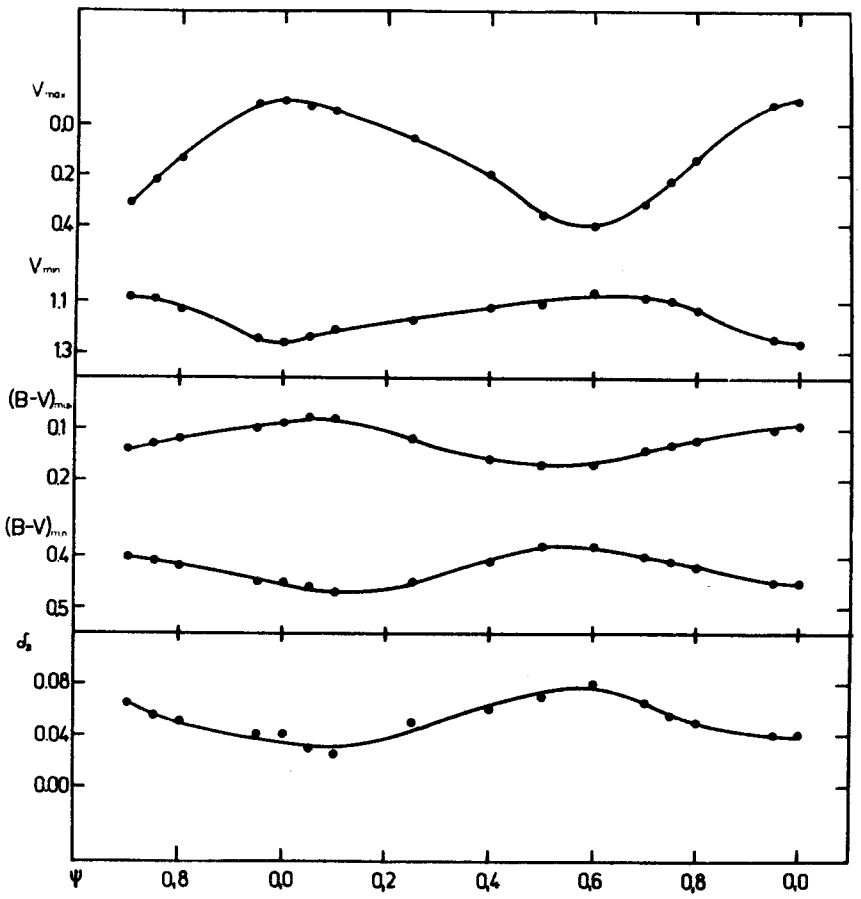

Figure 6
The curves show the typical variation of V_{max}, V_{min}, $/B-V/_{max}$, $/B-V/_{min}$ and δ_2 Preston index, during the secondary period.

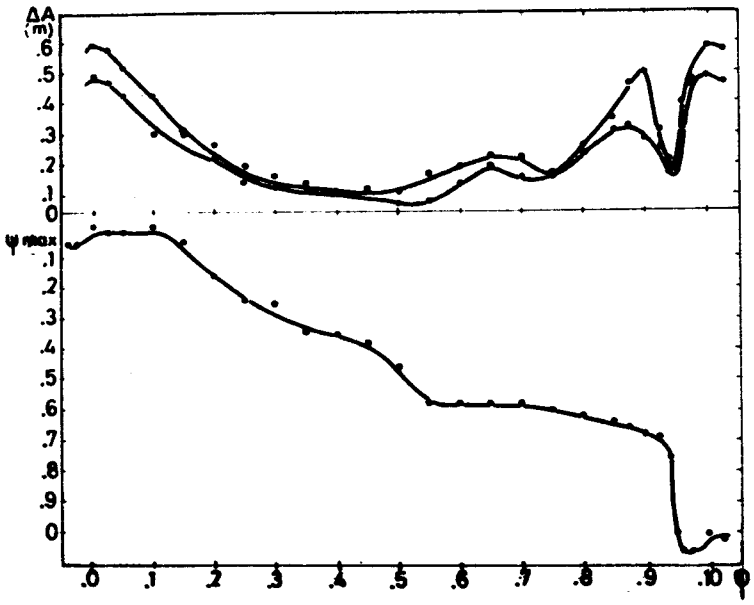

Figure 7a

Figure 7a shows the amplitudes of light curves belonging to different phases φ of figures 3a and 3b.

Figure 7b

ψ_{max} points show the ψ secondary phase of maxima of φ phase curves in the figure 3.

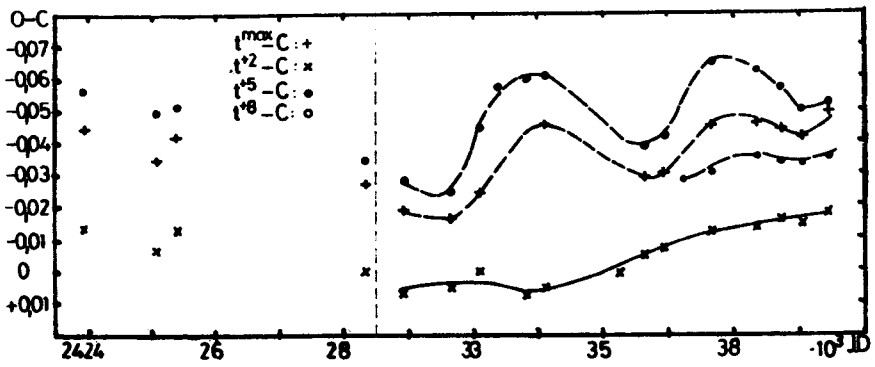

Figure 8

The O-C secular variations of three magnitude levels of the ascending branch of the main period.

This may be connected with the behaviour of the double light maximum of AR Her which appears at certain phases of the secondary period while no double maximum can be observed for RV UMa. The most important theoretical consequence of the fact that there is no oscillation on a certain phase point of the ascending branch of RV UMa during the Blashko period suggests that the fundamental and the secondary period can not arise due to two beat periods. That is to say in the case of superposition of beat periods the ascending branch of the main period would need to oscillate to produce the required effect in each of its phase points during the Blazhko period.

Figure 8 shows the /O-C/ secular variation of three magnitude levels of the ascending branch of the main period. The /O-C/ variations of the magnitude levels m:0,8, 0,5, 0,3 are cyclic and coincident with each other. The length of the cycle is approximately 6-8 years. The cyclic variation of these fixed magnitude points of the ascending branch is due to the secular cyclic variation of the light curve form. When the /O-C/ is more positive, the rising branch of the light curve is always steeper during the secondary period and vice versa; the less positive the /O-C/ variation the more sinusoidal in form the light curve.

Whatever the cause of the cyclic variation of the light curve form, the length of this cyclic variation of RV UMa is commensurable with that of RR Lyrae. However, this length of cyclic variation corresponds to the magnitude of the magnetic solar cycle therefore the suspicion that the cyclic variation is a magnetic variation of the variable star, as suggested by Detre, seems reasonable.

TABLE VII.

Year	E	t^{max}	$t^{max} - C$	$t^{+2} - C$	$t^{+5} - C$
		243 ...			
1958	39243	6229,6210	-0,0125	-0,0255	-
	39277	6245,5425	-0,0510	-0,0261	-0,0411
	39356	6282,5095	-0,0151	-0,0316	-0,0391
1959	40153	6655,5540	-0,0170	-0,0360	-0,0435
	40206	6680,3650	-0,0133	-0,0318	-0,0483
	40215	6684,5810	-0,0099	-0,0229	-0,0454
	40232	6692,5450	-0,0030	-0,0215	-0,0425
	40300	6724,3630	-0,0133	-0,0373	-
1961	41589	7327,6970	-0,0127	-0,0317	-0,0497
	41597	7331,4425	-0,0118	-	-
	41614	7339,-	-	-0,0343	-0,0443
	41625	7344,5470	-0,0130	-0,0355	-0,0420
	41627	7345,4860	-0,0102	-0,0352	-0,0442
	41644	7353,4430	-	-0,0357	-0,0407
	41655	7358,5940	-0,0079	-0,0359	-0,0459
	41659	7360,4650	-0,0092	-0,0390	-0,0427
	41670	7365,6125	-0,0104	-0,0363	-0,0414
	41674	7367,4825	-0,0126	-	-
	41676	7368,4180	-0,0132	-	-
	41689	7374,5040	-0,0121	-	-
	41693	7376,3725	-0,0113	-0,0373	-0,0423
	41734	7395,5600	-0,0189	-0,0394	-0,0479
	41736	7396,4970	-0,0180	-0,0375	-0,0500
	41738	7397,4350	-0,0162	-	-
	41749	7402,5880	-0,0119	-0,0324	-0,0485
	41753	7404,4570	-0,0151	-	-
	41768	7411,4775	-0,0156	-0,0309	-0,0526
	41783	7418,5020	-0,0120	-0,0300	-0,0515
	41796	7424,5870	-0,0118	-0,0333	-0,0463
	41864	7456,-	-	-0,0363	-0,0411
	41869	7463,4365	-0,0116	-0,0366	-0,0411

$t^{+\delta}-C$	t	t–C	N	ψ	ΔB^{max}	ΔB^{min}	C
-	0,594	-0,0395	201	0,616	+0,120	-	,6335
-	0,513	-0,0346	201	0,792	-0,005	-	,5476
-	0,4895	-0,0351	202	0,203	-0,390	-	,5246
-0,0525	0,5313	-0,0397	206	0,342	-0,300	+0,850	,5710
-0,0833	0,340	-0,0383	206	0,618	+0,105	-	,3783
-0,0684	0,5535	-0,0374	206	0,664	+0,100	+0,880	,5909
-0,0730	0,5135	-0,0345	206	0,752	+0,080	+0,910	,5480
-	-	-	207	0,106	-0,460	-	,3763
-0,0817	0,6675	-0,0422	213	0,800	-0,015	+0,975	,7097
-	-	-	213	0,842	-0,055	-	,4543
-	0,3700	-0,0413	213	0,932	-	-	,4113
-0,0540	0,5205	-0,0395	213	0,988	-0,415	+1,065	,5600
-0,0542	0,4574	-0,0388	213	0,999	-0,435	+1,075	,4962
-	0,415	-0,0382	214	0,089	-	-	,4532
-0,0559	0,5595	-0,0424	214	0,143	-0,490	+1,050	.6019
-0,0507	0,4300	-0,0442	214	0,164	-0,640	+1,075	,4742
-0,0489	0,5845	-0,0384	214	0,221	-0,525	+1,210	,6229
-	-	-	214	0,242	-	-	,4951
-	-	-	214	0,252	-	-	,4312
-	-	-	214	0,320	-	-	,5161
-0,0533	0,348	-0,0403	214	0,341	-0,430	+0,990	,3883
-	0,5345	-0,0444	214	0,553	-0,175	-	,5789
-0,0700	0,470	-0,0450	214	0,564	-0,140	+0,950	,5150
-	-	-	214	0,574	-0,130	+1,025	,4512
-0,0709	-0,5585	-0,0414	214	0,631	-0,090	+0,925	,5999
-	-	-	214	0,652	-0,025	-	,4721
-0,0801	0,4505	-0,0426	214	0,730	+0,045	+0,900	,4931
-0,0765	0,4705	-0,0435	214	0,808	0,000	+0,950	,5140
-0,0678	0,5578	-0,0410	214	0,876	-0,150	+1,000	,5988
-0,0483	0,3872	-0,0399	215	0,230	-	+1,180	,4271
-0,0485	0,4090	-0,0391	215	0,307	-0,470	-	,4481

TABLE VII.(cont.)

Year	E	t^{max}	t^{max} – C	t^{+2} – C	T^{+5} – C	t^{+8} – C
		243.....				
1962	42283	7652,5275	-0,0181	-	-	-
	42343	7680,6100	-0,0194	-0,0294	-0,0509	-0,0819
	42390	7702,6165	-0,0134	-0,0334	-0,0422	-0,0584
	42454	7732,5720	-0,0124	-0,0354	-0,0429	-0,0494
	42505	7756,4390	-0,0166	-0,0371	-0,0501	-0,0641
	42533	7769,5440	-0,0189	-0,0309	-0,0484	-0,0664
	42556	7780,3100	-0,0169	-0,0299	-	-
	42612	7806,5270	-0,0114	-0,0334	-0,0406	-0,0494
	42616	7808,3970	-0,0137	-0,0357	-0,0437	-0,0527
	42627	7813,5415	-0,0194	-0,0324	-0,0364	-0,0434
	42631	7815,4210	-0,0106	-0,0346	-0,0391	-0,0471
	42661	7829,4600	-0,0135	-0,0370	-0,0430	-0,0490
1963	43031	8003,6475	-0,0094	-0,0354	-0,0405	-0,0519
	43067	8019,500	-0,0152	-	-	-
	43127	8047,5805	-0,0185	-0,0230	-0,0470	-
	43208	8085,4910	-0,0131	-0,0331	-0,0386	-0,0481
	43210	8086,4295	-0,0107	-0,0337	-0,0373	-0,0457
	43219	8090,6390	-0,0138	-0,0346	-0,0398	-0,0453
	43270	8114,5050	-0,0190	-0,0355	-0,0442	-0,0558
1964	43913	8415,4750	-0,0171	-0,0320	-0,0501	-
	44003	8457,5975	-0,0168	-0,0388	-0,0427	-0,0518
	44086	8496,4400	-0,0211	-0,0376	-0,0598	-0,0836
	44101	8503,4750	-0,0160	-0,0345	-0,0540	-
	44197	8548,4035	-0,0151	-0,0331	-	-

Y

t	t-C	N	ψ	ΔB^{max}	ΔB^{min}	C
-	-	217	0,405	-0,375	-	,5456
0,5880	-0,0414	217	0,716	+0,035	+1,010	,6294
0,5895	-0,0389	217	0,961	-0,250	-	,6284
0,5445	-0,0399	218	0,293	-0,510	+1,145	,5844
0,4105	-0,0451	218	0,559	-0,190	+0,920	,4556
0,5205	-0,0409	218	0,704	+0,050	-	,5614
-	-	218	0,822	-0,025	-	,3269
0,5008	-0,0376	219	0,113	-0,385	+1,050	,5384
0,3720	-0,0387	219	0,134	-0,445	+1,150	,4107
0,5240	-0,0354	219	0,192	-0,385	+1,200	,5594
0,3940	-0,0376	219	0,212	-0,500	-	,4316
0,4330	-0,0405	219	0,368	-0,560	+0,975	,4745
0,6190	-0,0379	221	0,301	-0,500	-	,6569
-	-	221	0,477	-0,265	-	,5079
0,5505	-0,0405	221	0,489	+0,130	-	,5910
0,4675	-0,0366	222	0,209	-0,450	+1,260	,5041
0,4066	-0,0336	222	0,220	-0,445	+1,150	,4402
0,6150	-0,0378	222	0,265	-0,400	+1,160	,6528
0,4826	-0,0414	222	0,420	-0,138		,5240
0,4458	-0,0428	225	0,871	-0,040	+0,900	,4886
0,5740	-0,0430	226	0,338	-0,500	+1,150	,6143
0,4125	-0,0511	226	0,769	0,000	-	,4636
0,4377	-0,0468	226	0,847	-0,055	-	,4845
-	-	227	0,346	-0,520	-	,4186

TABLE VIII.

A^{m}_{φ} , Cl_{φ} and ψ^{max}_{φ} of RV Uma

1958 – 64 years

φ	ΔA^{v}	ΔA^{b}	ΔA^{uv}	Δ/B-V/	Δ/U-B/	ψ^{max}
0,000	+0,490	+0,590	+0,635	+0,135	+0,260	0,00
0,025	+0,470	+0,580	+0,585	+0,110	+0,350	0,02
0,050	+0,425	+0,515	+0,530	+0,125	+0,290	0,02
0,100	+0,300	+0,425	+0,420	+0,140	+0,145	0,00
0,150	+0,300	+0,310	+0,350	+0,140	+0,130	0,05
0,200	+0,220	+0,260	+0,210	+0,130	+0,100	0,16
0,250	+0,195	+0,140	+0,200	+0,125	+0,165	0,24
0,300	+0,125	+0,160	+0,200	+0,090	+0,255	0,25
0,350	+0,125	+0,140	-	+0,070	+0,220	0,34
0,400	+0,105	+0,110	-	+0,060	+0,220	0,35
0,450	+0,115	+0,110	-	-	-	0,38
0,500	+0,075	+0,110	-	+0,050	+0,135	0,46
0,550	+0,080	+0,170	-	-	-	0,58
0,600	+0,135	+0,195	-	+0,095	+0,210	0,58
0,650	+0,195	+0,225	-	-	-	0,58
0,700	+0,160	+0,220	-	+0,150	+0,140	0,58
0,750	+0,165	+0,160	+0,200	+0,105	+0,220	0,60
0,800	+0,235	+0,260	+0,218	+0,125	+0,170	0,62
0,850	+0,310	+0,350	+0,300	+0,160	+0,135	0,64
0,875	+0,325	+0,465	+0,350	+0,110	+0,235	0,66
0,900	+0,285	+0,500	+0,440	+0,240	+0,160	0,68
0,925	+0,255	+0,310	+0,225	+0,190	+0,070	0,69
0,940	+0,175	+0,220	+0,160	+0,310	+0,190	0,75
0,950	+0,185	+0,210	+0,190	+0,070	+0,090	0,00
0,960	+0,320	+0,400	+0,360	+0,220	+0,215	0,06
0,975	+0,460	+0,480	+0,545	+0,110	+0,220	0,06

REFFERENCES

/1/ AN 176. 109, 1907
/2/ AN 177. 107,1908
/3/ Allegheny Publ. VII.p.40.
/4/ AN 231. 153. 1927.
/5/ Budapest Mitt.Nr. 34.
/6/ Ap.J.130, 507, 1959.
/7/ Per.zvj. 9.No.4. 1953.
/8/ Ap.J. 117: 313.
/9/ Astron.techn. 1962. p. 203.
/10/ Budapest Mitt.Nr. 8 /1939/
/11/ Budapest Mitt. Nr. 51. /1961./
/12/ Ap.J. 147. 1025. 1967.

Table IV.

Observations in U,B,V.

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
36229.5960	10.604	+0.217		36282.5125	9.982	+0.099	
.5987	.565	.233		.5154	.979	.113	
.6049	.488	.238		.5182	.990	.100	
.6077	.468	.203		.5248	10.010	.096	
.6147	.392	.220		.5284	.034	.071	
.6175	.401	.192		.5318	.036	.087	
.6204	.382	.208		.5380	.082	.097	
.6304	.385	.225		.5435	.107	.099	
.6335	.401	.237		.5524	.144	.144	
.6372	.401	.204		.5553	.191	.149	
.6510	.434	.210		.5576	.221	.136	
.6546	.439	.213		.5769	.345	.178	
.6580	.444	.218		.5796	.343	.211	
.6708	.488	.246		.5825	.337	.243	
.6748	.518	.223		.5888	.434	.220	
.6781	.539	.230		.5917	.434	.217	
.6909	.552	.259		.5946	.436	.233	
.6944	.564	.267		.6008	.481	.237	
36245.5001	10.780	+0.238		.6037	.509	.222	
.5032	.719	.264		.6064	.504	.213	
.5070	.655	.330		36655.5100	10.944	+0.220	
.5134	.582	.280		.5141	.948	.360	
.5162	.536	.231		.5162	.957	.365	
.5188	.487	.251		.5204	.913	.310	
.5258	.343	.204		.5225	.858	.357	
.5307	.307	.152		.5245	.813	.259	
.5391	.265	.204		.5287	.683	.255	
.5435	.249	.214		.5308	.580	.274	
.5524	.279	.218		.5329	.491	.289	
.5558	.303	.172		.5374	.300	.226	
.5585	.338	.158		.5395	.256	.191	
.5664	.374	.191		.5416	.206	.191	
.5691	.388	.190		.5457	.225	.165	
.5719	.395	.189		.5478	.090	.130	
.5810	.436	.257		.5499	.068	.111	
.5851	.462	.201		.5541	.052	.117	
.5941	.495	.230		.5561	.047	.126	
.5995	.545	.225		.5582	.049	.131	
.6352	.741	.236		.5624	.062	.113	
.6400	.753	.256		.5645	.054	.113	
.6520	.826	.336		.5707	.063	.096	
.6575	.831	.291		36680.3030	10.915	+0.312	
36282.4898	10.495	+0.328		.3087	.911	.284	
.4934	.389	.315		.3135	.855	.327	
.4962	.269	.168		.3229	.770	.274	
.5016	.111	.142		.3251	.792	.278	
.5042	.048	.155		.3271	.758	.308	
.5070	9.999	.120		.3315	.697	.311	
.5097	.983	.102		.3333	.686	.261	

J.D. 2400000+	V	(B-V)	(U-B)
36680.3347	10.651	+0.289	
.3402	.573	.306	
.3419	.571	.287	
.3437	.530	.187	
.3478	.472	.176	
.3493	.478	.161	
.3512	.487	.162	
.3552	.458	.153	
.3570	.435	.173	
.3589	.405	.212	
.3634	.357	.227	
.3649	.354	.216	
.3738	.350	.236	
.3801	.373	.222	
.3821	.383	.213	
.3847	.364	.201	
.3900	.339	.217	
.3938	.355	.225	
.3978	.430	.155	
.3997	.427	.151	
36684.5033	10.989	+0.395	
.5054	.990	.364	
.5075	.966	.323	
.5116	.916	.357	
.5137	.908	.361	
.5158	.942	.359	
.5200	.887	.425	
.5220	.887	.405	
.5241	.890	.354	
.5283	.877	.338	
.5304	.865	.342	
.5345	.912	.302	
.5387	.784	.241	
.5408	.787	.251	
.5450	.722	.246	
.5470	.683	.278	
.5491	.673	.254	
.5533	.627	.204	
.5554	.612	.210	
36684.5575	10.586	+0.204	
.5616	.500	.260	
.5637	.475	.256	
.5658	.461	.240	
.5720	.431	.184	
.5741	.411	.204	
.5783	.391	.203	
.5804	.394	.213	
.5845	.392	.177	
.5889	.391	.184	
.5917	.400	.178	
.5967	.431	.138	
36692.4492	10.998	+0.387	
.4509	.994	.373	
36692.4527	10.989	+0.367	
.4545	.994	.375	
.4648	.960	.351	
.4672	.956	.352	
.4745	.933	.373	
.4775	.913	.220	
.4817	.893	.210	
.4838	.896	.287	
.4862	.873	.226	
.4904	.837	.301	
.4926	.799	.318	
.4948	.766	.309	
.5002	.681	.339	
.5020	.673	.329	
.5039	.664	.322	
.5084	.640	.300	
.5102	.622	.280	
.5116	.604	.289	
.5151	.560	.256	
.5165	.539	.250	
.5179	.527	.257	
.5213	.482	.248	
.5227	.464	.251	
.5241	.461	.244	
.5278	.433	.210	
.5292	.419	.221	
.5306	.407	.210	
.5344	.385	.196	
.5359	.377	.199	
.5373	.369	.194	
.5442	.348	.212	
36692.5456	10.337	+0.213	
.5492	.334	.219	
.5511	.338	.212	
.5529	.353	.211	
.5569	.371	.208	
.5587	.380	.208	
.5606	.394	.216	
.5647	.414	.217	
.5668	.426	.212	
.5689	.447	.229	
.5737	.488	.217	
.5763	.506	.190	
36724.3459	10.301	+0.134	
.3502	.194	.120	
.3519	.145	.123	
.3564	.019	.109	
.3577	9.978	.112	
.3591	.926	.111	
.3631	.907	.100	
.3645	.913	.089	
.3662	.920	.094	
.3700	.920	.095	
.3729	.925	.103	

J.D. 2400000+	V	(B-V)	(U-B)
36724.3796	9.925	+0.048	
.3817	10.028	.058	
.3837	.032	.084	
.3879	.038	.101	
37327.4429	10.946	+0.435	
.4476	.953	.439	
.4505	.977	.407	
.4521	.983	.432	
.4560	.991	.442	
.4578	.991	.413	
.4595	11.004	.444	
.5012	.029	.361	
.5053	.014	.364	
.5071	.039	.371	
.5089	.033	.384	
.5129	.042	.413	
.5180	.036	.364	
.5219	.014	.333	
.5237	.020	.372	
.5254	.019	.379	
.5293	.017	.385	
.5314	.018	.392	
.5330	.023	.382	
.5367	.035	.425	
.5393	.032	.413	
.5410	.033	.419	
.5504	.034	.391	
.5519	.020	.357	
.5536	.026	.379	
.5584	.013	.361	
.5597	.014	.351	
.5611	.018	.362	
.5652	.051	.373	
.5674	.053	.354	
.5688	.029	.382	
.5727	.053	.393	
.5741	.023	.396	
.5761	.016	.415	
.5803	.029	.429	
.5820	.031	.413	
.5837	.030	.414	
.5903	.022	.394	
.5976	.035	.375	
.6007	.038	.367	
.6154	10.987	.324	
.6172	.972	.352	
.6189	.984	.337	
.6242	.967	.337	
.6260	.960	.329	
.6279	.960	.315	
.6359	.908	.262	
.6379	.878	.275	
.6407	.865	.312	
.6484	.793	.248	
37327.6522	10.771	+0.294	
.6535	.768	.279	
.6571	.746	.287	
.6585	.720	.271	
.6603	.696	.268	
.6663	.622	.242	
.6677	.621	.217	
.6691	.611	.223	
.6728	.580	.201	
.6743	.551	.209	
.6759	.526	.187	
.6774	.509	.163	
.6808	.448	.190	
.6823	.433	.200	
.6837	.415	.180	
.6852	.395	.178	
.6886	.376	.151	
.6903	.347	.157	
.6919	.321	.153	
.6934	.303	.151	
.6984	.299	.159	
.6999	.297	.156	
.7014	.306	.167	
.7055	.293	.167	
.7074	.307	.156	
.7109	.311	.148	
.7133	.307	.188	
.7178	.316	.151	
37331.4368	10.311	+0.181	
.4414	.255	.173	
.4482	.259	.162	
.4518	.266	.159	
.4560	.274	.122	
.4575	.288	.127	
.4592	.292	.127	
.4634	.315	.094	
.4670	.318	.152	
.4742	.342	.192	
.4795	.406	.234	
.4811	.409	.226	
.4828	.392	.098	
.4866	.424	.196	
.4883	.418	.194	
.4942	.425	.231	
.4993	.497	.127	
.5049	.618	-0.066	
.5067	.617	.021	
.5095	.630	.026	
.5209	.608	+0.050	
.5268	.624	.250	
.5289	.620	.319	
37334.3988	10.823	+0.337	
.4034	.835	.318	
.4054	.833	.334	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37334.4095	10.852	+0.330		37339.3773	10.378	+0.273	
.4123	.871	.295		.4202	.249	.182	
.4156	.862	.339		.4215	.211	.140	
.4203	.862	.322		.4246	.192	.150	
.4225	.881	.325		.4251	.194	.132	
.4248	.898	.366		.4274	.234	.091	
.4317	.899	.359		.4305	.251	.095	
.4337	.900	.376		.4319	.264	.085	
.4362	.917	.336		.4332	.264	.086	
.4418	.938	.361		.4366	.286	.080	
.4440	.936	.387		.4380	.295	.077	
.4466	.928	.331		.4395	.309	.068	
.4513	.934	.368		.4433	.329	.068	
.4536	.940	.348		.4450	.337	.070	
.4562	.950	.357		.4467	.357	.071	
.4614	.960	.376		.4503	.392	.130	
.4636	.961	.373		.4520	.390	.142	
.4656	.972	.415		.4538	.392	.148	
.4713	.969	.343		.4578	.407	.195	
.4739	.984	.338		.4602	.446	.149	
.4763	.998	.337		.4614	.461	.211	
.4867	11.014	.395		.4645	.455	.205	
.4888	.027	.359		.4686	.507	.185	
.4907	.025	.374		.4718	.533	.189	
.4959	.040	.318		.4764	.527	.213	
.4978	.059	.290		.4780	.528	.217	
.5001	.063	.324		.4796	.536	.207	
.5054	.047	.389		.4836	.569	.256	
.5114	.026	.356		.4851	.590	.289	
.5138	.010	.403		.4865	.603	.275	
.5166	10.996	.375		.4902	.613	.246	
.5221	.993	.332		.4917	.622	.231	
.5236	11.001	.351		.4933	.603	.264	
.5252	.002	.374		.4969	.648	.236	
.5267	10.998	.335		.4987	.647	.206	
.5327	.987	.475		.5004	.655	.231	
.5356	11.009	.396		.5039	.656	.266	
.5381	.017	.348		.5056	.681	.243	
.5433	.023	.387		.5076	.679	.229	
.5448	.033	.449		.5129	.699	.226	
.5590	.027	.441		.5143	.714	.141	
.5611	.031	.437		.5156	.731	.268	
.5669	.038	.421		.5184	.749	.281	
.5746	.022	.362		.5198	.775	.289	
5766	10.965	.346		.5212	.741	.293	
.5785	.959	.348		.5242	.744	.301	
37339.3622	10.836	+0.209		.5277	.746	.264	
.3637	.803	.237		.5346	.805	.271	
.3675	.729	.229		.5360	.808	.306	
.3691	.661	.180		.5374	.825	.315	
.3704	.630	.200		.5402	.787	.358	
.3738	.586	.181		.5416	.792	.330	
37339.3755	10.454	+0.224		.5430	.783	.337	
				.5464	.820	.304	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37339.5478	10.825	+0.346		37344.4707	11.171	+0.391	
.5492	.839	.352		.4757	.177	.414	
.5526	.838	.331		.4772	.162	.360	
.5540	.840	.347		.4785	.162	.328	
.5555	.845	.339		.4827	.157	.355	
.5598	.845	.375		.4843	.162	.358	
.5612	.865	.384		.4857	.152	.357	
.5628	.864	.365		.4941	.089	.401	
.5670	.870	.344		.4954	.078	.393	
.5692	.868	.392		.4968	.077	.406	
.5707	.887	.336		.4998	.034	.314	
.5744	.874	.314		.5012	.020	.316	
.5759	.856	.351		.5025	.000	.346	
.5774	.865	.316		.5052	10.934	.333	
.5912	.917	.354		.5066	.933	.290	
.5966	.941	.412		.5080	.928	.362	
.6009	.958	.420		.5110	.861	.326	
.6022	.957	.402		.5125	.831	.296	
.6037	.968	.364		.5137	.804	.311	
.6077	.986	.355		.5163	.751	.296	
.6092	11.013	.381		.5177	.707	.245	
.6109	.012	.376		.5192	.666	.292	
.6146	.023	.362		.5219	.586	.208	
.6161	.021	.414		.5234	.511	.180	
.6176	.034	.454		.5248	.467	.188	
.6214	.057	.447		.5274	.405	.175	
.6227	.053	.449		.5287	.368	.162	
.6242	.062	.442		.5300	.344	.108	
.6436	.061	.380		.5329	.285	.012	
.6450	.049	.401		.5344	.253	.047	
.6486	.059	.403		.5360	.224	.053	
.6536	.048	.420		.5389	.154	.055	
.6573	.066	.351		.5401	.114	.054	
37344.4091	11.159	+0.196		.5413	.077	.041	
.4132	.157	.356		.5440	.043	.045	
.4154	.156	.263		.5454	.030	.059	
.4217	.086	.321		.5466	.032	.041	
.4231	.080	.481		.5479	.021	.038	
.4247	.085	.413		.5491	.030	.027	
.4281	.029	.369		.5503	.027	.041	
.4297	.001	.382		.5517	.023	.055	
.4316	.031	.581		.5541	.016	.066	
.4426	.018	.334		.5553	.024	.063	
.4440	.025	.259		.5568	.030	.040	
.4479	.060	.233		.5600	.049	.054	
.4493	.092	.329		.5614	.055	.065	
.4511	.124	.445		.5630	.064	.070	
.4544	.153	.392		.5659	.080	.084	
.4558	.145	.431		.5673	.085	.090	
.4573	.144	.340		.5687	.094	.099	
.4606	.157	.357		.5762	.143	.075	
.4643	.152	.340		.5781	.156	.101	
.4675	.166	.370		.5796	.176	.091	
.4691	.172	.387		.5827	.200	.060	

J.D. 2400000+	V	(B-V)	(U-B)
37344.5841	10.201	+0.093	
.5857	.220	.089	
.5888	.252	.068	
.5903	.259	.112	
.5919	.266	.124	
.5961	.329	.082	
.5991	.349	.081	
.6017	.363	.105	
.6166	.454	.146	
.6182	.464	.171	
.6199	.485	.205	
.6244	.512	.215	
.6264	.512	.169	
.6282	.530	.202	
.6354	.525	.205	
.6371	.521	.197	
.6393	.545	.137	
.6440	.583	.162	
.6454	.612	.131	
.6467	.630	.148	
37345.4085	11.186	+0.349	
.4102	.188	.319	
.4120	.179	.368	
.4182	11.153	+0.392	
.4215	.127	.414	
.4232	.137	.414	
.4249	.119	.369	
.4278	.095	.381	
.4285	.079	.340	
.4305	.063	.333	
.4337	.050	.319	
.4349	.029	.315	
.4363	.019	.340	
.4392	10.965	.377	
.4406	.947	.369	
.4422	.929	.358	
.4469	.858	.222	
.4481	.831	.239	
.4492	.802	.243	
.4518	.764	.199	
.4529	.727	.214	
.4542	.689	.195	
.4568	.634	.285	
.4580	.579	.197	
.4593	.564	.342	
.4614	.515	.403	
.4625	.479	.342	
.4637	.413	.160	
.4658	.359	.169	
.4670	.334	.142	
.4682	.299	.166	
.4700	.234	.141	
.4713	.221	.168	
.4725	.185	.090	
37345.4747	10.129	+0.083	
.4757	.098	.076	
.4768	.065	.028	
.4782	.045	.056	
.4795	.030	.033	
.4808	.020	.057	
.4822	.009	.053	
.4844	9.998	.054	
.4856	.985	.057	
.4870	.980	.058	
.4892	.994	.043	
.4904	10.013	.015	
.4915	.022	.015	
.4942	.019	.029	
.4956	.024	.025	
.4970	.030	.031	
.4996	.054	.056	
.5008	.068	.046	
.5021	.073	.033	
.5046	.084	.065	
.5059	.091	.073	
.5070	.114	.081	
.5096	.123	.072	
.5110	.155	.088	
.5123	.160	.086	
.5152	.201	.121	
37353.4083	10.803	+0.280	
.4132	.698	.257	
.4149	.665	.234	
.4181	.496	.124	
.4194	.445	.148	
.4210	.417	.127	
.4243	.288	.164	
.4255	.241	.211	
.4269	.116	.148	
.4300	.123	.103	
.4315	.106	.122	
.4327	.075	.173	
.4369	9.959	.142	
.4384	.941	.095	
37358.3889	11.026	+0.402	
.3908	.020	.488	
.3928	.037	.528	
.3972	.061	.349	
.3993	.081	.412	
.4016	.086	.523	
.4071	.116	.466	
.4089	.118	.512	
.4107	.116	.494	
.4149	.130	.473	
.4164	.125	.356	
.4185	.138	.363	
.4231	.145	.393	
.4247	.145	.413	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37358.4263	10.133	+0.423		37358.5818	10.083	+0.160	
.4301	.122	.432		.5835	.053	.163	
.4343	.131	.425		.5846	.038	.159	
.4380	.115	.435		.5859	.008	.165	
.4396	.102	.429		.5873	9.979	.149	
.4411	.101	.383		.5987	.966	.154	
.4462	.119	.398		.5901	.963	.145	
.4479	.127	.384		.5933	.966	.120	
.4493	.108	.392		.5949	.956	.101	
.4530	.087	.418					
.4546	.100	.384		37360.3754	11.188	+0.297	
.4562	.114	.430		.3784	.207	.364	
.4599	.120	.385		.3800	.236	.527	
.4613	.080	.405		.3846	.199	.370	
.4630	.075	.430		.3868	.211	.335	
.4668	.065	.406		.3890	.199	.311	
.4683	.089	.371		.3927	.188	.332	
.4700	.072	.415		.3943	.203	.333	
.4745	.068	.420		.3960	.206	.283	
.4761	.114	.485		.4006	.239	.517	
.4777	.118	.418		.4023	.210	.319	
.4841	.085	.413		.4041	.203	.356	
.4858	.100	.500		.4083	.253	.352	
.4881	.156	.409		.4102	.165	.355	
.4919	.117	.385		.4121	.165	.349	
.4962	.113	.496		.4163	.098	.377	
.4983	.182	.327		.4182	.094	.398	
.5032	.232	.384		.4200	.093	.356	
.5052	.212	.385		.4244	.003	.189	
.5076	.239	.314		.4260	10.976	.179	
.5133	.232	.416		.4277	.931	.233	
.5151	.214	.397		.4315	.806	.180	
.5165	.208	.350		.4332	.654	.168	
.5205	.248	.391		.4345	.577	.158	
.5224	.265	.346		.4361	.516	.091	
.5242	.209	.342		.4377	.438	.104	
.5287	.224	.367		.4391	.379	.108	
.5305	.206	.412		.4406	.325	.033	
.5323	.208	.450		.4441	.211	.038	
.5378	.190	.408		.4457	.166	.033	
.5399	.149	.424		.4471	.148	.050	
.5416	.127	.378		.4490	.098	.016	
.5457	.076	.326		.4506	.049	.052	
.5476	.025	.290		.4522	.009	.038	
.5495	10.988	.260		.4537	9.991	.008	
.5550	.886	.207		.4569	.939	.015	
.5563	.873	.197		37360.4586	9.921	-0.033	
.5576	.838	.165		.4601	.921	.023	
.5628	.634	.197		.4619	.923	.040	
.5643	.573	.222		.4678	.903	.076	
.5660	.520	.262		.4713	.912	.129	
.5751	.241	.181		.4730	.924	.075	
.5785	.136	.180		.4748	.928	.070	
.5799	.113	.184		.4807	.977	+0.030	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37360.4824	9.994	+0.064		37360.6597	10.987	+0.361	
.4845	10.017	.042		.6630	.986	.332	
.4881	.054	.080		.6645	.992	.349	
.4897	.078	.047		.6660	.995	.354	
.4913	.089	.056		.6690	11.030	.340	
.4950	.139	-0.020		37365.3912	11.060	+0.389	
.4967	.132	.013		.3943	.088	.468	
.4983	.127	+0.015		.3960	.093	.462	
.5020	.113	.073		.3998	.108	.472	
.5039	.126	.047		.4016	.114	.476	
.5052	.102	-0.015		.4032	.118	.470	
.5116	.152	+0.098		.4068	.104	.480	
.5140	.213	.104		.4085	.121	.422	
.5161	.235	.145		.4102	.128	.451	
.5201	.269	.171		.4137	.142	.485	
.5218	.283	.191		.4151	.132	.421	
.5236	.283	.223		.4169	.138	.445	
.5307	.349	.129		.4205	.151	.510	
.5330	.377	.128		.4220	.155	.501	
.5351	.391	.111		.4236	.147	.451	
.5426	.442	,185		.4270	.152	.444	
.5445	.452	.214		.4288	.155	.436	
.5463	.478	.221		.4304	.152	.406	
.5564	.521	.221		.4351	.165	.412	
.5589	.521	.218		.4367	.170	.414	
.5619	.555	.289		.4384	.159	.336	
.5666	.566	.199		.4425	.178	.403	
.5688	.585	.205		.4437	.184	.429	
.5704	.634	.200		.4455	.189	.449	
.5765	.655	.290		.4487	.192	.468	
.5785	.666	.265		.4633	.143	.377	
.5816	.662	.331		.4648	.126	.325	
.5876	.720	.259		.4723	.114	.476	
.5901	.714	.273		.4737	.110	.475	
.5923	.723	.280		.4750	.109	.465	
.6965	.724	.290		.4781	.120	.457	
.6030	.734	.295		.4797	.132	.462	
.6052	.745	.314		.4813	.133	.393	
.6089	.776	.312		.4846	.163	.444	
.6108	.809	.293		.4861	.159	.379	
.6149	.831	.324		.4877	.165	.380	
.6179	.843	.304		.4915	.164	.367	
.6213	.858	.304		.4930	.160	.371	
.6310	.915	.347		.4945	.166	.436	
.6330	.933	.323		.4977	.159	.479	
.6350	.933	.359		.4992	.162	.531	
.6396	.934	.387		.5008	.142	.437	
.6418	.932	.378		.5057	.131	.354	
.6439	.936	.388		.5071	.140	.361	
.6480	.935	.319		.5086	.147	.346	
.6499	.943	.338		.5149	.209	.477	
.6519	.953	.354		.5166	.206	.404	
.6560	.973	.337		.5194	.222	.412	
.6581	.981	.369					

J.D. 2400000+	V	(B-V)	(U-B)
37365.5208	11.225	+0.404	
.5222	.226	.387	
.5257	.219	.431	
.5270	.227	.426	
.5284	.224	.426	
.5312	.218	.428	
.5326	.226	.491	
.5340	.227	.514	
.5368	.204	.395	
.5382	.191	.324	
.5395	.207	.427	
.5427	.219	.467	
.5444	.227	.485	
.5461	.234	.482	
.5490	.244	.431	
.5506	.240	.359	
.5520	.270	.441	
.5572	.210	.408	
.5592	.189	.438	
.5608	.157	.387	
.5642	.111	.412	
.5655	.090	.414	
.5667	.077	.430	
.5700	.016	.402	
.5715	10.985	.352	
.5729	.966	.382	
.5760	.896	.298	
.5773	.860	.291	
.5785	.821	.273	
.5810	.735	.287	
.5825	.673	.255	
.5839	.625	.231	
.5866	.475	.216	
.5879	.413	.162	
.5892	.365	.166	
.5930	.243	.150	
.5944	.196	.120	
.5958	.149	.115	
.5973	.109	.095	
.5987	.085	.119	
.6001	.058	.103	
.6016	.029	.095	
.6046	9.986	.067	
.6060	.974	.066	
.6076	.963	.065	
.6091	.945	.061	
.6107	.924	.037	
.6120	.916	.035	
.6134	.916	.046	
.6162	.919	.022	
.6177	.926	.027	
.6191	.937	.039	
.6226	.960	.001	
.6242	.959	-0.006	
37365.6259	9.967	-0.014	
.6290	.990	+0.008	
.6304	.995	-0.006	
.6319	.998	+0.003	
.6350	10.011	.038	
37376.3026	11.129	+0.309	
.3061	.123	.293	
.3076	.122	.309	
.3107	.121	.352	
.3124	.116	.349	
.3139	.113	.347	
.3174	.090	.302	
.3187	.081	.305	
.3203	.068	.321	
.3255	.050	.302	
37376.3274	.048	.311	
.3291	.049	.357	
.3323	.030	.347	
.3339	.003	.273	
.3362	10.974	.289	
.3392	.908	.289	
.3406	.863	.247	
.3419	.829	.285	
.3448	.746	.297	
.3461	.696	.271	
.3476	.653	.247	
.3503	.548	.153	
.3524	.481	.138	
.3544	.422	.158	
.3571	.329	.107	
.3583	.278	.091	
.3596	.242	.095	
.3610	.190	.148	
.3623	.133	.148	
.3633	.093	.085	
.3645	.071	.108	
.3657	.053	.081	
.3671	.040	.096	
.3684	.014	.051	
.3697	.001	.058	
.3723	9.986	.113	
.3735	.972	.059	
.3748	.974	.092	
.3760	.978	.092	
.3773	.978	.085	
.3785	.979	.065	
.3799	.985	.061	
.3829	.995	.035	
.3843	10.003	.037	
.3858	.012	.045	
.3983	.078	.071	
.3997	.078	.032	
.4025	.098	.082	
.4039	.102	.069	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37376.4053	10.109	+0.058		37396.4367	10.988	+0.340	
.4080	.115	.024		.4384	.983	.347	
.4094	.125	.030		.4398	.971	.321	
.4108	.136	.058		.4455	.928	.314	
.4136	.148	.065		.4474	.908	.348	
.4150	.157	.052		.4489	.901	.339	
.4164	.162	.042		.4739	.559	.195	
.4198	.177	.051		.4772	.483	.190	
.4212	.192	.099		.4816	.402	.141	
.4226	.207	.150		.4828	.381	.174	
.4254	.219	.137		.4841	.357	.169	
.4268	.214	.077		.4867	.321	.162	
.4282	.222	.086		.4883	.298	.145	
.4317	.239	.085		.4897	.285	.144	
.4330	.256	.151		.4935	.243	.124	
.4344	.270	.196		.4950	.231	.109	
.4394	.293	.187		.4973	.217	.114	
.4431	.311	.185		.5020	.230	.119	
.4454	.345	.307		.5035	.230	.111	
.4492	.341	.179		.5051	.232	.110	
.4510	.344	.143		.5104	.248	.110	
.4528	.374	.221		.5122	.249	.092	
37395.5334	10.644	+0.217		.5172	.262	.082	
.5347	.621	.206		37397.3265	11.106	+0.338	
.5365	.579	.222		.3293	.121	.417	
.5402	.472	.186		.3307	.116	.409	
.5415	.430	.171		.3346	.093	.336	
.5429	.381	.168		.3361	.094	.386	
.5466	.325	.174		.3377	.093	.409	
.5481	.312	.188		.3409	.067	.321	
.5497	.295	.148		.3429	.061	.331	
.5540	.248	.078		.3443	.072	.413	
.5554	.238	.103		.3477	.058	.336	
.5570	.216	.087		.3493	.045	.344	
.5597	.197	.105		.4190	10.354	.141	
.5610	.190	.094		.4216	.322	.143	
.5625	.190	.105		.4229	.301	.110	
.5641	.194	.129		.4262	.273	.133	
.5655	.197	.129		.4278	.254	.105	
.5670	.196	.114		.4293	.242	.102	
.5687	.200	.119		.4326	.232	.123	
.5720	.207	.100		.4342	.224	.105	
.5736	.221	.151		.4358	.225	.118	
.5750	.224	.147		.4391	.226	.140	
.5785	.236	.152		.4409	.228	.124	
.5800	.239	.142		.4427	.230	.112	
.5816	.241	.110		.4466	.243	.107	
37396.4202	11.060	+0.373		.4487	.247	.091	
.4220	.050	.318		.4512	.255	.080	
.4240	.039	.286		.4563	.276	.088	
.4287	.023	.300		.4603	.297	.099	
.4306	.020	.352		.4677	.339	.148	
.4323	10.995	.268		.4711	.357	.170	

J.D. 2400000+	V	(B-V)	(U-B)
37397.4783	10.376	+0.110	
.4817	.387	.084	
.4843	.401	.144	
.4943	.435	.127	
.5000	.467	.188	
.5043	.489	.207	
.5104	.504	.153	
.5135	.534	.257	
.5163	.541	.230	
.5187	.550	.232	
.5202	.557	.243	
.5235	.562	.208	
.5255	.567	.206	
.5275	.573	.206	
.5370	.631	.328	
.5386	.629	.282	
.5403	.633	.258	
.5441	.649	.278	
.5455	.647	.240	
.5500	.667	.241	
.5532	.678	.242	
.5547	.690	.274	
.5562	.700	.270	
.5593	.703	.263	
.5610	.716	.306	
.5625	.720	.311	
.5680	.734	.283	
.5704	.747	.307	
.5725	.753	.308	
.5781	.777	.327	
.5801	.783	.325	
.5816	.785	.312	
.5852	.801	.315	
.5981	.853	.391	
.6035	.856	.308	
.6050	.864	.317	
.6063	.884	.399	
37397.6093	.873	.283	
.6107	.893	.363	
.6125	.902	.377	
.6167	.906	.323	
37399.4761	10.866	+0.382	
.4791	.854	.270	
.4814	.863	.276	
.4903	.894	.312	
.4922	.897	.295	
.4943	.913	.364	
.4990	.912	.356	
.5019	.917	.353	
.5038	.922	.365	
.5082	.933	.380	
.5103	.935	.374	
.5122	.939	.368	
37399.5163	10.942	+0.366	
.5182	.947	.377	
.5201	.951	.381	
.5242	.955	.383	
.5261	.955	.372	.5279
.5279	.961	.394	
.5329	.970	.397	
.5351	.972	.395	
.5373	.974	.380	
.5418	.978	.362	
.5439	.989	.407	
.5465	.995	.405	
.5576	11.025	.444	
.5597	.026	.425	
.5622	.028	.405	
.5668	.038	.403	
.5685	.038	.394	
.5708	.041	.391	
.5829	.058	.396	
.5845	.064	.429	
.5883	.064	.396	
.5903	.069	.412	
.5925	.069	.396	
.5971	.074	.400	
.5989	.072	.377	
.6005	.072	.368	
.6045	.083	.424	
.6064	.075	.374	
.6080	.078	.396	
.6131	.072	.397	
.6157	.071	.411	
37402.3334	10.970	+0.387	
.3354	.974	.388	
.3375	.973	.393	
.3421	.975	.380	
.3445	.975	.375	
.3466	.978	.385	
.3521	.976	.334	
.3545	.979	.319	
.3568	.984	.331	
.3618	.995	.349	
.3640	11.000	.344	
.3664	.019	.336	
.3718	.028	.462	
.3746	.018	.367	
.3782	.038	.467	
.3879	.035	.412	
.3896	.014	.314	
.3921	.025	.405	
.3976	.036	.384	
.3994	.042	.404	
.4015	.041	.395	
.4059	.040	.368	

J.D. 2400000+	V	(B-V)	(U-B)
37402.4079	11.038	+0.341	
.4112	.042	.347	
.4153	.044	.341	
.4181	.045	.353	
.4196	.044	.355	
.4245	.046	.369	
.4273	.045	.370	
.4301	.042	.359	
.4345	.042	.356	
.4364	.037	.334	
.4381	.045	.383	
.4420	.038	.347	
.4438	.036	.340	
.4455	.042	.385	
.5356	10.897	.216	
.5374	.890	.280	
.5389	.867	.230	
.5426	.840	.305	
.5442	.824	.299	
.5460	.793	.250	
.5499	.748	.261	
.5518	.722	.248	
.5539	.695	.240	
.5577	.643	.223	
.5596	.617	.224	
.5618	.582	.211	
.5659	.531	.160	
.5677	.494	.139	
.5698	.479	.183	
.5731	.439	.123	
.5750	.422	.183	
.5769	.385	.097	
.5805	.350	.089	
.5822	.333	.102	
.5843	.329	.117	
.5880	.296	.032	
.5898	.291	.023	
.5917	.302	.110	
.5957	.310	.092	
.5975	.320	.056	
.5993	.322	.073	
.6034	.354	.152	
.6053	.349	.039	
37404.4505	10.354	+0.113	
.4533	.342	.113	
.4548	.320	.122	
.4564	.337	.145	
.4578	.328	.109	
.4592	.324	.093	
.4624	.330	.124	
.4642	.333	.115	
.4658	.339	.126	
.4676	.341	.128	

J.D. 2400000+	V	(B-V)	(U-B)
37404.4775	10.371	+0.177	
.4789	.367	.146	
.4805	.365	.126	
.4846	.378	.152	
.4868	.379	.123	
.4888	.395	.185	
.4927	.410	.208	
.4944	.410	.191	
.4998	.423	.177	
.5034	.430	.160	
.5053	.438	.167	
.5075	.447	.181	
.5118	.466	.209	
.5138	.467	.172	
.5157	.476	.190	
.5195	.485	.190	
.5210	.496	.222	
.5320	.524	.218	
.5353	.531	.214	
.5368	.542	.249	
.5383	.547	.254	
.5416	.555	.255	
.5475	.575	.262	
.5490	.580	.265	
.5506	.587	.270	
.5549	.599	.263	
.5565	.609	.283	
.5585	.622	.307	
.5630	.638	.305	
.5647	.644	.309	
.5666	.650	.293	
.5710	.650	.223	
37406.4665	10.750	+0.271	
.4680	.755	.272	
.4698	.762	.289	
.4734	.777	.315	
.4750	.774	.272	
.4772	.782	.296	
.4811	.797	.321	
.4832	.802	.317	
.4852	.809	.331	
.4902	.832	.385	
.4930	.835	.355	
.4968	.844	.352	
.5056	.867	.359	
.5150	.889	.342	
.5165	.900	.381	
.5206	.901	.324	
.5230	.909	.326	
.5257	.928	.406	
.5305	.940	.408	
.5322	.932	.354	
.5422	.942	.359	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37406.5465	10.936	+0.325		37411.4750	10.374	+0.174	
.5592	.934	.324		.4774	.374	.176	
.5606	.943	.379		.4787	.373	.163	
.5644	.949	.404		.4800	.372	.159	
37411.3828	11.007	+0.381		.4835	.374	.155	
.3841	10.993	.356		.4858	.373	.138	
.3853	.987	.362		.4880	.376	.150	
.3882	.959	.296		.4924	.379	.157	
.3896	.963	.347		.4938	.380	.149	
.3915	.959	.343		.4960	.382	.150	
.3967	.956	.348		.5006	.388	.145	
37411.3980	10.956	+0.351		.5020	.390	.144	
.3994	.951	.331		.5035	.389	.138	
.4021	.944	.322		.5066	.400	.173	
.4036	.959	.363		.5081	.399	.163	
.4050	.944	.342		.5097	.403	.165	
.4078	.941	.350		.5134	.410	.166	
.4091	.944	.379		.5149	.415	.175	
.4105	.935	.348		.5174	.426	.199	
.4140	.924	.334		.5212	.438	.187	
.4157	.918	.334		.5230	.448	.191	
.4175	.911	.321		.5245	.454	.182	
.4209	.901	.332		.5285	.485	.213	
.4225	.883	.298		.5301	.496	.212	
.4239	.881	.322		.5350	.523	.197	
.4274	.854	.309		.5365	.535	.208	
.4289	.839	.278		37418.3288	11.027	+0.071	
.4303	.828	.278		.3364	.036	.354	
.4333	.804	.279		.3386	.035	.370	
.4346	.790	.254		.3428	.037	.400	
.4361	.772	.246		.3451	.033	.351	
.4390	.766	.237		.3502	.039	.367	
.4406	.721	.207		.3521	.039	.353	
.4424	.709	.221		.3545	.042	.328	
.4453	.684	.219		.3591	.064	.374	
.4465	.676	.238		.3612	.093	.388	
.4478	.665	.248		.3633	.079	.388	
.4505	.631	.229		.3679	.078	.318	
.4517	.615	.209		.3697	.078	.313	
.4529	.599	.211		.3718	.084	.343	
.4556	.523	.202		.4498	10.848	.260	
.4568	.546	.197		.4527	.826	.298	
.4579	.534	.202		.4541	.812	.305	
.4600	.514	.189		.4555	.799	.292	
.4615	.498	.168		.4584	.768	.262	
.4629	.487	.184		.4597	.759	.265	
.4643	.479	.195		.4610	.740	.229	
.4667	.446	.155		.4639	.718	.242	
.4680	.428	.152		.4653	.701	.210	
.4695	.416	.163		.4669	.687	.208	
.4710	.403	.182		.4700	.658	.221	
.4723	.387	.181		.4716	.637	.209	
.4737	.379	.178		.4730	.620	.200	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37418.4746	10.603	+0.175		37424.5288	10.991	+0.309	
.4761	.582	.187		.5315	.972	.273	
.4778	.565	.162		.5351	.947	.303	
.4809	.547	.186		.5404	.892	.259	
.4826	.520	.147		.5430	.830	.318	
.4845	.498	.181		.5455	.805	.280	
.4865	.469	.169		.5507	.726	.282	
.4887	.435	.136		.5544	.670	.304	
.4944	.358	.096		.5562	.644	.259	
.4976	.337	.173		.5596	.583	.218	
.5005	.315	.186		.5612	.564	.192	
.5020	.309	.179		.5630	.539	.197	
.5036	.308	.190		.5666	.473	.164	
.5052	.306	.181		.5687	.434	.143	
.5086	.304	.164		.5704	.417	.127	
.5104	.309	.175		.5741	.367	.144	
.5124	.311	.161		.5756	.361	.123	
.5139	.314	.151		.5772	.317	.099	
.5155	.319	.154		.5799	.260	.147	
.5190	.333	.145		.5811	.255	.106	
.5206	.337	.127		.5824	.243	.092	
.5225	.344	.116		.5852	.231	.118	
.5260	.356	.090		37443.3284	9.974	+0.079	
.5276	.371	.124		.3321	.988	.075	
.5294	.382	.140		.3341	10.007	.092	
37424.4007	11.018	+0.359		.3465	.100	.114	
.4042	.022	.372		.3480	.114	.109	
.4095	.026	.350		.3494	.122	.111	
.4145	.033	.365		.3530	.168	.130	
.4164	.038	.393		.3549	.193	.135	
.4207	.033	.377		.3566	.204	.105	
.4226	.034	.382		.3601	.224	.106	
.4256	.032	.382		.3617	.233	.089	
.4304	.026	.380		.3634	.250	.148	
.4328	.023	.386		.3674	.285	.115	
.4345	.021	.379		37443.3692	10.303	+0.165	
.4385	.015	.362		.3711	.308	.161	
.4412	.012	.359		.3753	.367	.200	
.4441	.013	.378		.3773	.374	.212	
.4475	.016	.394		.3791	.379	.200	
.4560	.020	.367		.3826	.415	.185	
.4595	.031	.380		.3847	.421	.178	
.4658	.036	.346		.3868	.431	.171	
.4697	.049	.383		.3910	.469	.196	
.4725	.055	.401		.3933	.496	.211	
.4774	.067	.429		.3955	.512	.212	
.4846	.078	.389		.4000	.518	.211	
.5064	.083	.369		.4021	.537	.206	
.5096	.060	.319		.4042	.548	.219	
.5112	.052	.329		.4226	.658	.265	
.5160	.037	.358		.4242	.680	.259	
.5184	.037	.366		.4257	.698	.247	
.5224	.021	.338		.4310	.734	.295	

J.D. 2400000+	V	(B-V)	(U-B)
37443.4330	10.740	+0.288	
.4396	.761	.326	
.4430	.821	.382	
.4486	.817	.363	
.4518	.823	.351	
.4535	.833	.366	
.4556	.839	.364	
.4597	.844	.341	
.4615	.850	.361	
.4639	.856	.353	
.4678	.879	.360	
.4697	.895	.404	
.4715	.903	.372	
.4754	.908	.363	
.4774	.926	.379	
.4800	.931	.379	
.4864	.955	.369	
.4891	.965	.346	
.4928	.979	.249	
.5000	11.003	.367	
.5040	.034	.341	
.5068	.060	.352	
37456.3611	11.163	+0.471	
.3639	.170	.419	
.3654	.171	.409	
.3666	.165	.384	
.3680	.144	.371	
.3705	.104	.386	
.3718	.069	.355	
.3730	.057	.364	
.3753	.030	.367	
.3768	10.989	.299	
.3780	.956	.369	
.3808	.889	.370	
.3832	.806	.294	
.3857	.727	.273	
.3878	.592	.213	
.3908	.474	.140	
.3917	.411	.206	
.3936	.352	.114	
.3946	.335	.134	
.3968	.276	.187	
.3977	.229	.168	
.4002	.134	.108	
.4010	.111	.094	
.4042	9.966	-0.052	
.4051	.928	.041	
37463.3994	10.967	+0.303	
.4021	.896	.267	
.4035	.864	.313	
.4048	.799	.311	
.4075	.679	.235	
.4088	.629	.223	
37463.4101	10.543	+0.235	
.4126	.454	.187	
.4141	.375	.111	
.4154	.305	.144	
.4180	.242	.135	
.4192	.224	.124	
.4207	.165	.097	
.4236	.077	.048	
.4250	.051	.056	
.4264	.042	.082	
.4292	.018	.057	
.4306	9.999	.041	
.4320	.986	.037	
.4348	.961	-0.005	
.4362	.964	+0.025	
.4378	.964	.044	
.4408	.974	.074	
.4426	.971	.045	
.4444	.985	.093	
.4476	.991	.033	
.4494	10.001	.023	
.4528	.033	.088	
.4542	.034	.060	
.4557	.043	.060	
.4588	.063	.084	
.4606	.070	.078	
.4624	.082	.075	
.4658	.113	.141	
37652.5210	10.056	+0.239	
.5218			-0.107
.5255	9.948	.198	
.5262			+0.026
.5275	.956	.142	
.5281			.027
.5293	.982	.110	
.5298			.091
.5332	.980	.122	
.5338			.016
.5350	.984	.134	
.5357			-0.076
.5369	10.005	.089	
.5375			.155
.5407	.035	.089	
.5417			.172
.5435	.037	.092	
.5442			.195
.5456	.053	.107	
.5462			.170
.5501	.067	.102	
.5509			.071
.5522	.085	.097	
.5528			.055
.5542	.090	.144	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37652.5550			-0.142	37668.4638	10.201	+0.206	
.5585	10.113	+0.133		.4642			-0.043
.5592			+0.066	.4655	.218	.222	
.5606	.115	.130		.4662			+0.040
.5612			-0.032	37668.4693	10.254	+0.171	
.5627	.129	.155		.4700			+0.050
.5638			.048	.4715	.288	.161	
.5678	.140	.173		.4725			-0.004
.5685			+0.005	.4741	.324	.172	
.5698	.168	.135		.4746			.009
.5706			-0.017	.4777	.332	.179	
.5720	.198	.144		.4783			+0.041
.5728			+0.022	.4801	.336	.182	
.5770	.234	.167		.4810			.075
.5778			-0.004	.4823	.350	.198	
.5792	.248	.170		.4829			-0.018
.5800			+0.042	.4868	.370	.227	
.5928	.316	.179		.4874			.063
.5935			.065	.4889	.401	.151	
.5967	.333	.145		.4895			.045
.5976			.025	.4930	.370	.263	
.5998	.347	.186		.4936			.175
.6010			.065	.4949	.400	.211	
.6040	.349	.221		.4954			.038
.6057			.063	.5020	.420	.262	
.6118	.368	.277		.5026			.157
.6130			.054	.5040	.434	.205	
.6155	.389	.229		.5047			.005
.6165			.112	.5085	.446	.269	
.6192	.428	.184		.5093			-0.079
.6207			.044	.5111	.458	.265	
.6275	.479	.258		.5118			.126
.6282			.001	.5152	.484	.253	
.6300	.503	.219		.5157			.059
.6310			.024	.5464			+0.024
.6337	.536	.247		.5471	.585	.317	
.6343			.032	.5504			-0.002
.6377	.546	.246		.5510	.581	.354	
.6383			-0.072	.5523			.008
.6399	.552	.273		.5528	.595	.314	
.6406			.117	.5561			.020
.6418	.564	.271		.5568	.606	.328	
.6424			.147	.5579			+0.007
.6460	.593	.267		.5585	.619	.252	
.6468			.108	.5622			-0.001
.6480	.594	.271		.5628	.652	.275	
.6487			.052	.5643			+0.022
.6500	.604	.273		.5650	.659	.318	
.6505			.034	.5686			-0.067
.6536	.616	.299		.5692	.677	.313	
.6541			.024	.5705			.016
37668.4602	10.182	+0.186		.5717	.699	.282	
.4606			-0.014	.5759			+0.030
				.5766	.714	.269	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37668.5782			+0.001	37672.5726			-0.078
.5788	-10.709	+0.269		.5738	10.968	+0.341	
.5838			-0.007	.5754			.028
.5844	.748	.257		.5760	.961	.372	
.5858			.010	.5797			.017
.5864	.760	.261		.5802	11.010	.373	
.5904			.038	37680.4659			+0.031
.5910	.732	.251		.4670	11.058	0.350	
.6011			.020	.4721			-0.051
.6017	.812	.300		.4758	.072	.365	
.6059			.031	.4822			.041
.6065	.802	.330		.4834	.037	.339	
.6081			.035	.4947	.097	.329	
.6089	.798	.305		.4980	.080	.442	
.6121			+0.008	.4998	.091	.416	
.6127	.832	.345		.5081			.046
.6140			-0.012	.5092	.057	.372	
.6147	.845	.348		.5113			.012.
.6184			.019	.5123	.048	.378	
.6190	.859	.336		.5183			.053
.6201			.037	.5198	.017	.302	
.6208	.863	.336		.5227			.064
.6247			+0.050	.5237	.000	.378	
.6255	.863	.333		.5293			.084
37672.5145	11.024	+0.345		.5305	10.989	.372	
.5188			-0.119	.5326			.078
.5195	.038	.377		.5335	.960	.373	
.5211			.089	.5386			.036
.5222	.050	.368		.5398	.966	.363	
.5279			.097	.5423			.015
.5285	.043	.344		.5433	.931	.182	
.5300			+0.012	.5534	.936	.283	
.5309	.038	.282		.5539			.008
.5350			-0.074	.5556	.931	.295	
.5358	.076	.372		.5566			.017
.5377			.163	.5612	.852	.302	
.5384	.057	.414		.5619			.096
.5428			.193	.5640	.828	.318	
.5434	.104	.415		.5647			.114
.5447			.156	.5659	.795	.316	
.5455	.080	.461		.5665			+0.023
.5502			.160	.5705	.790	.286	
.5510	.095	.496		.5712			.093
.5531			.079	.5728	.782	.239	
.5542	.093	.391		.5735			.034
.5583			.076	.5769	.751	.237	
.5592	.024	.400		.5775			.055
.5608			.067	.5789	.718	.220	
.5615	.048	.365		.5796			.070
.5658			.052	.5810	.692	.270	
.5666	.027	.335		.5816			.018
.5678			.050	.5850	.648	.249	
.5686	.027	.337		.5858			-0.015

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37680.5875	11.619	+0.258		37702.5778			-0.059
.5881			+0.015	.5790	11.861	+0.297	
.5896	.579	.288		.5795			.097
.5903			.018	.5826	.784	.286	
.5939	.556	.178		.5832			.032
37680.5944			-0.023	.5852	.809	.195	
.5957	.494	.151		.5858			.090
.5964			.024	.5869	.745	.291	
.5980	.470	.242		.5875			.006
.5988			.040	.5909	.491	.295	
.6030	.414	.222		.5916			.051
.6038			.029	.5928	.488	.222	
.6052	.386	.221		.5933			.059
.6058			.039	.5945	.510	.172	
.6070	.373	.209		.5951			.072
.6077			.050	.5982	.414	.168	
.6112	.378	.200		.5988			.017
.6119			.016	.6001	.381	.178	.021
.6135	.372	.218		.6024	.318	.162	
.6142			.008	.6031			.031
.6157	.389	.168		.6066	.223	.162	
.6165			.017	.6073			.053
.6208	.365	.255		.6087	.178	.189	
.6216			.020	.6093	.		.044
.6234	.359	.140		.6106	.147	.159	
.6242			.033	.6113			+0.007
.6258	.351	.157		.6152	.116	.102	
.6265			.016	.6158			.041
.6309	.364	.148		.6174	.098	.133	
.6316			.014	.6183			-0.005
.6331	.375	.129		.6198	.095	.138	
.6338			.022	.6206			0.000
.6355	.377	.124		.6246	.109	.142	
.6373			.033	.6253			0.000
.6432	.382	.155		.6270	.147	.128	
.6444			.073	.6278			+0.007
.6520	.401	.258		.6295	.152	.119	
.6528			.026	.6303			-0.030
.6580	.445	.234		.6345	.173	.164	
.6590			-0.021	.6360			.050
.6610	.457	.218		.6398	.201	.152	
.6620			.011	.6409	.		+0.025
.6676	.465	.222		.6424	.217	.144	
.6688			+0.007	.6429	.		-0.003
.6706	.520	.181		.6464	.228	.134	
.6714			.092	.6471			+0.022
.6766	.498	.228		37732.3670	11.092	+0.414	
.6776			.047	.3686			-0.036
37702.5708	11.042	+0.212		.3737	.094	.371	
.5716			-0.104	.3745			.061
.5753	10.923	.280		.3763	.076	.387	
.5760			.036	.3771			.015
.5772	.896	.268		.3820	.100	.376	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37732.3828			-0.024	37732.5254			+0.008
.3845	11.123	+0.394		.5266	11.106	+0.383	
.3853			.042	.5271			-0.010
.3900	.151	.437		.5282	.076	.395	
.3909			+0.015	.5287			+0.030
.3930	.182	.416		.5319	11.034	+0.314	
.3940			-0.163	.5323			+0.009
.3997	.231	.465		.5334	.001	.269	
.4006			.034	.5338			-0.014
.4026	.202	.409		.5350	10.941	.317	
.4037			+0.010	.5357			+0.014
.4092	.188	.392		.5386	.902	.351	
.4101			.012	.5392			-0.050
.4120	.141	.440		.5402	.922	.327	
.4129			.035	.5408			.060
.4180	.162	.442		.5493			.004
.4192			-0.022	.5498	.402	.217	
.4217	.175	.440		.5509			+0.003
.4224			.031	.5515	.346	.180	
.4276	.170	.459		.5530			.023
.4287			.062	.5535	.259	.195	
.4312	.163	.470		.5569			-0.024
.4320			.103	.5575	.126	.140	
.4365	.165	.432		.5586			.019
.4373			+0.012	.5592	.084	.086	
.4730	.216	.395		.5604			.024
.4737			.026	.5610	.048	.107	
.4751	.183	.450		.5650			.102
.4758			-0.043	.5655	+9.957	.069	
.4812	.236	.376		.5665			.016
.4818			.073	.5669	.943	.063	
.4832	.223	.392		.5681			.004
.4840			.028	.5686	.922	.044	
.4887	.208	.424		.5717			.014
.4894			.039	.5721	9.904	+0.052	
.4908	.206	.409		.5732			-0.023
.4915			.027	.5737	.901	.050	
.4965	.211	.382		.5753			.038
.4971			+0.041	.5758	.886	.094	
.4985	.206	.410		.5787			.055
.4991			-0.035	.5792	.911	.096	
.5034	.195	.406		.5822			.045
.5040			.063	.5830	.931	.092	
.5055	.189	.399		.5846			.046
.5061			.009	.5852	.940	.097	
.5120	.190	.403		.5891			.010
.5127			.022	.5897	.964	.064	
.5140	.200	.429		.5999			.001
.5147			.064	.6006	10.029	.094	
.5188	.177	.407		.6018			.008
.5195			+0.022	.6024	.047	.099	
.5210	.176	.435		.6053			.004
.5215			-0.047	.6058	.070	.129	
.5249	.132	.393		.6070			+0.001

J.D. 2400000+	V	(B-V)	(U-B)
37732.6076	10.080	+0.135	
.6089			-0.005
.6095	.108	.121	
.6129			.009
.6135	.127	.130	
.6148			.004
.6154	.137	.148	
.6167			.014
.6173	.149	.150	
.6214			.001
.6220	.171	.162	
.6235			+0.005
.6242	.184	.152	
.6256			.012
.6262	.195	.133	
.6295			.003
.6305	.251	.121	
.6320			-0.035
.6327	.252	.141	
.6408			.014
.6412	.310	.186	
.6444			.018
.6450	.331	.212	
37756.3730	10.987	+0.360	
.3735			+0.021
.3771	.985	.364	
.3776			.067
.3788	.990	.345	
.3794			.016
.3829	.966	.374	
.3835			-0.032
.3850	.959	.346	
.3856			.001
.3869	.940	.363	
.3875			.014
.3912	.927	.359	
.3918			.014
.3932	.903	.339	
.3937			.003
.3950	.892	.366	
.3957			+0.002
.3991	.853	.354	
.3997			.026
.4010	.832	.266	
.4017			-0.013
.4032	.818	.250	
.4038			.003
.4072	.704	.192	
.4077			+0.075
.4096	.731	.149	
.4104			.040
.1425			.045
.4156	.517	.244	
37756.4162			+0.012
.4174	10.481	+0.209	
.4180			-0.014
.4195	.417	.216	
.4203			+0.005
.4240	.376	.201	
.4244			-0.033
.4256	.337	.187	
.4263			.018
.4278	.296	.180	
.4284			.004
.4318	.247	.130	
.4324			.003
.4336	.201	.149	
.4342			.024
.4353	.153	.162	
.4358			.032
.4394	.130	.132	
.4401			.032
.4418	.164	.151	
.4424			.026
.4439	.164	.168	
.4446			.027
.4482	.198	.131	
.4487			.032
.4501	.187	.160	
.4508			.018
.4523	.191	.139	
.4529			.024
.4565	.204	.167	
.4570			.050
.4585	.207	.169	
.4593			.012
.4654	.229	.151	
.4658			+0.024
.4691	.252	.166	
.4697			-0.015
.4711	.268	.179	
.4717			.007
.4730	.275	.165	
.4736			+0.030
.4774	.295	.193	
.4782			0.000
.4796	.305	.214	
.4808			-0.024
.4830	.318	.193	
.4838			.016
.4885	.335	.189	
.4892			+0.013
.4921	.343	.221	
.4930			.011
.4974	.362	.215	
.4987			.018
.5028	.381	.246	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37756.5044			-0.020	37769.5313	10.441	+0.256	
.5554	10.625	+0.287		.5360			-0.042
.5570			+0.028	.5372	.391	.151	
.5580	.644	.313		.5394			.095
.5633			-0.007	.5404	.380	.198	
.5643	.660	.303		.5420			.011
.5668			.046	.5431	.326	0.179	
.5681	.670	.315		.5468			.129
.5730			+0.004	.5476	.322	.216	
.5739	.680	.362		.5498			.127
.5760			-0.011	.5504	.333	.190	
.5768	.703	.327		.5521			.017
.5815			+0.025	.5528	.336	.182	
.5826	.735	.319		.5568			.026
.5859			.027	.5577	.337	.153	
.5872	.753	.309		.5594			.001
.5936			-0.026	.5604	.349	.196	
.5945	.747	.317		.5624			+0.010
.5968			+0.033	.5631	.364	.226	
.5982	.779	.348		.5674			.038
.6036			-0.051	.5683	.348	.182	
.6052	.809	.398		37780.3021	10.398	+0.167	
.6080			.070	.3027			+0.271
.6100	.833	.394		.3071	.337	.130	
.6138			.035	.3076			.176
.6146	.854	.390		.3088	.326	.126	
37769.4873			-0.125	.3094			.020
.4880	10.935	+0.406		.3139	.329	.117	
.4894			.087	.3145			.052
.4898	.984	.372		.3166	.318	.127	
.4913			.081	.3174			-0.092
.4960			.071	.3213	.331	.098	
.4965	.973	.277		.3220			.037
.4979			.110	.3236	.360	.114	
.4987	.923	.337		.3244			.045
.5003			.127	.3276	.346	.133	
.5041			+0.052	.3286			.049
.5046	.777	.243		.3306	.331	.186	
.5062			-0.007	.3314			.046
.5071	.778	.265		.3388	.358	.237	
.5085			+0.022	.3399			.091
.5093	.742	.274		.3434	.353	.241	
.5125			-0.001	.3449			+0.073
.5130	.711	.268		.3478	.387	.212	
.5142			.026	.3494			.096
.5147	.700	.276		.3552	.439	.169	
.5163			.069	37806.4290	11.125	+0.348	
.5173	.648	.247		.4300			-0.250
.5222			+0.093	.4366	.130	.304	
.5236	.586	.293		.4377			.146
.5270			-0.004	.4397	.154	.400	
.5279	.505	.203		.4409			.225
.5307			.104	.4427	.193	.451	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37806.4436			-0.215	37806.5490			-0.135
.4514			.128	.5498	10.103	+0.079	
.4524	11.196	+0.408		.5533	.097	-0.004	
.4549			.132				
.4563	.161	.441		37808.3439	11.136	+0.469	
.4581			.227	.3445			-0.090
.4590	.141	.381		.3466	.126	.429	
.4676	.130	.445		.3477			.028
.4685			.213	.3495	092	.430	
.4705	.104	.419		.3501			.164
.4715			.283	.3515	.085	.377	
.4734	.088	.468		.3523			+0.029
.4745			.235	.3558	.017	.425	
.4758	.069	.430		.3578	10.986	.373	
.4765			.163	.3584			-0.003
.4770			+0.015	.3598	.982	.329	
.4784	10.991	.467		.3605			.237
.4862	.989	.373		.3626	.912	.316	
.4870			.015	.3633			.087
.4885	.970	.316		.3648	.864	.310	
.4893			.028	.3689	.759	.250	
.4910	.847	.361		.3710	.664	.224	
.4918			.023	.3716			.181
.4937	.780	.320		.3730	.567	.242	
.4970			.050	.3751			.141
.4978	.739	.234		.3778	.404	.170	
.4994			.067	.3797			.128
.5002	.640	.262		.3815	.242	.156	
.5019			-0.005	.3862	.121	.081	
.5038	.481	.269		.3870			+0.008
.5048			.028	.3883	.044	.108	
.5064	.387	.245		.3890			.043
.5123	.226	.125		.3905	9.986	.067	
.5136			.145	.3911			-0.065
.5147	.109	.142		.3925	.949	.097	
.5161			.107	.3960	.935	.104	
.5177	.053	.219		.3980	.916	.120	
.5230			+0.076	.3987			.074
.5238	.007	.242		.4002	.910	.112	
.5253	9.959	.127		.4008			.018
.5260			-0.027	.4022	.920	.104	
.5278	.953	.163		.4030			.063
.5286			.027	.4044	.910	.064	
.5300	.933	.107		.4078	.924	.132	
.5308			+0.112	.4084			.082
.5348	.990	.090		.4098	.945	.118	
.5363			-0.043	.4109			.124
.5370	10.002	.102		.4126	.960	.134	
.5385			+0.113	.4133			.103
.5392	.006	.094		.4148	.975	.116	
.5408			.092	.4154			.070
.5417	.028	.087		.4168	.992	.131	
.5435			-0.047	.4210	10.024	.139	
.5444	.047	.081		.4230	.040	.134	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
37808.4237			-10.050	37813.4306	11.141	+0.426	
.4252	10.070	+0.117		.4313			-0.060
.4258			.041	.4327	.141	.438	
.4272	.083	.137		.4334			.083
.4280			.020	.4376			.043
.4294	.104	.134		.4383	.140	.397	
.4300			.027	.4396			.088
.4315	.132	.146		.4403	.163	.367	
.4321			.041	.4417			.108
.4335	.147	.141		.4424	.174	.352	
.4341			.062	.4438			.035
.4360	.174	.109		.4445	.169	.357	
37813.3688			-0.062	.4487	.214	.282	
.3695	11.134	+0.344		.4494			.037
.3710			.044	.4507	.197	.345	
.3716	.153	.336		.4514			+0.026
.3730			+0.065	.4528	.174	.372	
.3737	.124	.398		.4535			-0.052
.3751			-0.069	.4549	.192	.395	
.3757	.123	.407		.4556			.091
.3813	.134	.412		.4598			.205
.3820			.041	.4605	.204	.516	
.3834	.137	.437		.4620			.057
.3841			.076	.4626	.210	.491	
.3855	.136	.420		.4640			.033
.3862			.072	.4646	.250	.424	
.3883			.066	.4660			.099
.3931			.114	.4667	.268	.365	
.3938	.066	.413		.4710	.207	.417	
.3953			.118	.4716			.142
.3959	.060	.435		.4730	.224	.411	
.3973			.140	.4737			.136
37813.3980	11.086	+0.225		.4751	.244	.398	
.3994			.127	.4757			.127
.4001	.093	.395		.4771	.255	.463	
.4042	.114	.457		.4778			.133
.4050			.176	.5050			.086
.4063	.131	.454		.5056	.023	.450	
.4070			.165	.5098	.023	.396	
.4092			.160	.5105			+0.098
.4112			.037	.5119	.037	.360	
.4153			.014	.5127			-0.053
.4160	.129	.369		.5244			+0.018
.4174			-0.040	.5251	10.543	.220	
.4181	.125	.348		.5264			-0.068
.4195			.183	.5270	.446	.180	
.4203	.134	.401		.5286			.054
.4216			.107	.5293	.345	.118	
.4223	.133	.422		.5327			.101
.4264	.128	.423		.5334	.157	.058	
.4274			.050	.5348			.087
.4285	.132	.416		.5355	.121	.122	
.4293			.053	.5390			.216
				.5397	9.988	.104	

J.D. 2400000+	V	(B-V)	(U-B)
37813.5410			-0.195
.5417	9.959	+0.134	
.5331			.138
.5438	.987	.163	
.5473			.147
.5480	.949	.188	
.5493			.116
.5500	.974	.142	
37815.3818	10.939	+0.371	
.3824			-0.281
.3838	.971	.442	
.3849			.301
.3866	.995	.287	
.3873			.119
.3888	.880	.318	
.3897			.168
.3915	.760	.318	
.3921			.116
.3935	.722	.159	
.3942			.101
.3956	.527	.241	
.3992	.375	.204	
.3998			.053
.4012	.291	.194	
.4019			.093
.4032	.229	.197	
.4043			.068
.4060	.135	.148	
.4068			.114
.4103	.006	.181	
.4124	9.991	.118	
.4130			.142
.4145	.948	.103	
.4151			.100
.4165	.919	.097	
.4171			.094
.4185	.897	.062	
.4192			.102
.4206	.866	.112	
.4213			.084
.4228	9.873	.080	
.4234			-0.065
.4275	.909	.072	
.4296	.945	.061	
.4303			.044
.4318	.949	.103	
.4324			.056
.4345	.935	.085	
.4352			.050
.4366	.922	.120	
.4408	.930	.157	
.4422			+0.041
.4428	.934	.083	
37815.4456	9.957	+0.119	
.4463			+0.013
.4478	.976	.147	
.4484	.		-0.073
.4498	10.026	.150	
.4540	.096	.125	
.4554			+0.003
.4560	.095	.107	
.4567			-0.017
.4582	.100	.132	
.4588			.041
.4602	.130	.100	
.4610			+0.002
.4651	.148	.120	
.4672	.181	.092	
.4678			.102
.4692	.152	.110	
.4700			.141
.4714	.168	.067	
.4720			.097
.4735	.186	.089	
.4790	.239	.152	
.4796			.109
.4810	.241	.084	
.4817			.148
.4832	.241	.152	
.4838			.079
.4852	.274	.137	
.4860			.056
.4874	.301	.152	
.4880			.041
.4895	.317	.198	
.4901			-0.030
.4915	.341	.178	
.4956	.375	.220	
.4963			.024
.4978	.384	.237	
.4984			.016.
.4998	.424	.228	
.5004			.056
.5020	.448	.226	
.5027			-0.006
.5060	.462	.205	
.5082	.481	.162	
.5088			+0.202
.5102	.486	.179	
37829.3622	11.116	+0.283	
.3629			-0.184
.3670	.148	.393	
.3679			.364
.3709			.394
.3734	.125	.361	
.3740			.307

J.D. 2400000+	V	(B-V)	(U-B)
37829.3755	11.130	+0.349	
.3792			-0.072
.3802	.089	.314	
.3820			.143
.3834	.100	.259	
.3851			+0.049
.3858	.082	.389	
.3880			-0.038
.3886	.093	.441	
.3948			+ .037
.3970	.057	.358	
.3978			.149
.3997			.033
.4017			-0.082
.4050	.083	.310	
.4101			.255
.4108	.045	.319	
.4123			.333
.4129	10.967	.213	
.4145			.080
.4156	11.048	.338	
.4174			0.000
.4234	10.888	.424	
.4240			+0.098
.4255	.849	.373	
.4261			.040
.4275	.755	.394	
.4281			.102
.4295	.716	.293	
.4302			.185
.4316	.680	.231	
.4351			.063
.4358	.477	.241	
.4372			.069
.4379	.354	.228	
.4393			.164
.4413			-0.029
.4441	.124	.194	
.4470			.018
.4484	.003	.192	
.4490			+0.027
.4505	9.983	.106	
.4511			-0.098
.4525	.884	.139	
.4535			+0.040
.4552	.808	.181	
.4580			.037
.4588	.792	.117	
.4601			.021
.4608	.777	.130	
.4622			-0.117
.4630	.807	.169	
.4643			.116
.4650	.899	.136	
37829.4698	9.995	+0.146	
.4705			-0.176
.4720	10.006	.193	
.4726			.086
.4740	.012	.187	
.4747			.088
.4761	.037	.186	
.4767			.063
.4780	.088	.134	
.4816			.065
.4837			+0.278
.4845	.145	.004	
38003.6085	10,944	+0.256	
.6093			-0.565
.6140	.826	.209	
.6151			+0.005
.6203	.545	.231	
.6210			-0.128
.6224	.473	.195	
.6231			.132
.6279	.237	.170	
.6287			.007
.6300	.197	.073	
.6307			.034
.6363	9.991	.122	
.6370			.108
.6387	.947	.107	
.6397			.047
.6418	,930	.056	
.6429			.032
.6471	.894	.070	
.6487			.090
.6508	.897	.083	
.6519			.084
.6540	.913	.082	
.6550			.070
.6593	.916	.079	
.6603			.070
38019.5001	10.115	+0.095	
.5008			-0.019
.5044	.086	.150	
.5050			.043
.5058	.080	.119	
.5065			.027
.5100	.093	.131	
.5109			.013
.5128	.132	.118	
.5135			.036
.5183	,181	.124	
.5190			.055
.5211	.171	.154	
.5218			.018
.5268	.173	.176	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
38019.5277			-0.028	38415.5446			-0.017
.5294	10.220	+0.170		.5553	10.992	+0.401	
.5302			.034	.5565			+0.008
.5323	.228	.176		.5599	.991	.383	
.5333			.013	.5609			-0.027
.5378	.252	.186		.5633	.979	.370	
.5392			.010	.5640			+0.056
.5416	.268	.192		.5658	11.007	.355	
.5427			.010	.5668			-0.069
.5475	.321	.154		.5727	.016	.351	
.5483			.016	.5738			.008
.5507	.343	.161		.5751	.035	.351	
.5517			+0.026	.5762			.017
.5569	.357	.129		.5821	.012	.375	
.5580			-0.018	.5832			.008
.5600	.367	.130		.5855	.003	.291	
.5607			.038	.5866			+0.030
.5670			+0.028	.6002	.014	.341	
.5679	.408	.239		.6012			.042
.5690	.414	.241		.6038	10.996	.354	
.5697			-0.010	.6051			-0.059
.5767	.456	.232		.6127	.982	.205	
.5777			+0.037	.6137			.081
.5805	.485	.198		.6157	11.003	.363	
.5815			.091	.6168			.058
.5899	.523	.250		.6221	10.994	.396	
.5905			.007	.6248			+0.010
.5930	.507	.241		.6280	11.016	.353	
.5940			.050	.6286			.013
.6030	.575	.272		.6329	.003	.379	
.6039			-0.034	.6339			.005
.6069	.607	.241		.6355	.014	.389	
.6080			+0.010	.6362			-0.017
.6146	.629	.323		38051.6408	11.001	+0.376	
.6155			-0.067	.6418			0.082
.6169	.645	.281		.6435	.009	.398	
.6176			.042	.6450			.027
.6232	.646	.250		.6498	.009	.363	
.6247			.096	.6512			.022
.6666			+0.143	.6536	.001	.380	
.6683	.922	.272		.6547			.047
.6750			.118	.6605	.035	.351	
.6760	.906	.323		.6616			.068
.6776			.118	.6648	.038	.337	
.6791	.929	.312		.6668			.087
.6862			.065	.6724	.040	.459	
.6875	.866	.443		.6734			.097
.6930			-0.122	.6755	.061	.356	
.6961	.896	.408		.6766			.069
.7037			.083	.6807	10.979	.429	
.7048	.964	.397		.6818			.085
.7065			.048	38415.4282	10.816	+0.411	
.7090	.971	.412		.4343			-0.197
38051.5433	10.987	+0.414					

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
38415.4350	10.766	+0.238		38457.5347	11.135	+0.402	
.4373	.722	.260		.5395			-0.024
.4436	.649	.257		.5406	.112	.472	
.4445			-0.010	.5423			+0.014
.4530			+0.062	.5430	.117	.443	
.4538	.471	.229		.5478			.052
.4580			.048	.5485	.062	.414	
.4590	.431	.197		.5548			-0.050
.4610			.028	.5555	.052	.386	
.4616	.407	.157		.5597			+0.008
.4635			-0.012	.5603	10.993	.360	
.4645	.388	.218		.5617			-0.108
.4695			.074	.5624	.949	.310	
.4702	.320	.109		.5657			.058
.4722			.011	.5664	.868	.304	
.4729	.319	.157		.5684			.001
.4780			+0.011	.5697	.758	.308	
.4790	.298	.135		.5730			.093
.4807			.028	.5737	.561	.302	
.4815	.298	.136		.5750			.032
.4867			.048	.5757	.465	.230	
.4875	.290	.166		.5778			+0.056
.4934			.042	.5784	.344	.198	
.4943	.297	.213		.5826			.068
.4998	.319	.175		.5833	.129	.108	
.5047			+0.057	.5847			.032
.5075	.336	.205		.5854	.102	.190	
.5129	.360	.202		.5867			.028
.5142			.020	.5874	.009	.169	
.5160	.390	.164		.5917			-0.016
.5218	.415	.192		.5924	9.925	.085	
.5246		.261	.038	.5937			.020
.5317	.449	.157		.5944	.908	.122	
.5380			.086	.5962			+0.021
38457.4764			-0.052	.5972	.863	.093	
.4770	11.229	+0.442		.6013			.016
.4816			.052	.6020	.877	.095	
.4826	.181	.465		.6034			.039
.4840			.139	.6041	.879	.067	
.4847	.204	.398		.6090			.056
.4888			.143	.6100	.892	.100	
.4895	.162	.447		.6117			.046
.4917			.141	.6124	.912	.102	
.4923	.169	.438		.6166			.069
.4974			.066	.6173	.926	.095	
.5020			.127	38496.3838	10.910	+0.318	
.5027	.173	.469		.3886	.885	.263	
.5073			.067	.3906	.900	.259	
.5100			.032	.3913			-0.087
.5110	.160	.423		.3955			.109
.5166			.074	.3969	.849	.196	
.5173	.140	.492		.3977			.013
.5340			+0.027	.4990	.815	.229	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
38496.3997			-0.095	38503.4621			+0.094
.4031	10.741	+0.232		.4628	11.302	+0.201	
.4038			.109	.4643			.068
.4066	.682	.245		.4649	.289	.204	
.4073			.104	.4718			.083
.4123	.637	.185		.4725	.301	.206	
.4129			+0.095	.4740			.064
.4150			.121	.4746	.288	-133	
.4177	.559	.252		.4795			.046
.4184			.020	.4803	.293	0.131	
.4198	.517	.277		.4817			+0.072
.4205			-0.010	.4823	.246	.160	
.4240	.471	.287		.4857			0.088
.4247			+0.007	.4864	.284	.170	
.4261	.467	.195		.4878			.126
.4268			.030	.4889	.320	.152	
.4317			.032	.4927			.062
.4330	.435	.129		.4934	.340	.174	
.4337			+0.096	.5850	.652	.344	
.4380	.340	.148		39548.3807	10.353	+0.220	
.4387			-0.054	.3814			.006
.4400	.297	.117		.3848	.256	.125	
.4407			+0.120	.3855			.066
.4455			.036	.3867	.173	.050	
.4477			.036	.3874			.062
.4525	.329	.170		.3887	.136	.085	
.4531			.071	.3892			.019
.4545	.333	.219		.3925	.051	.060	
.4552			.044	.3932			.080
.4608	.390	.125		.3946	9.999	.054	
.4615	.		.047	.3953			.094
.4629	.374	.165		.3967	.962	.072	
.4637			.005	.3973			.128
.4677	.413	.176		.4015	.937	.041	
.4684			.057	.4022			.056
38503.3778	11.026	+0.420		.4036	.934	.030	
.4267			+0.066	.4043			.051
.4278	.771	.240		.4057	.936	.066	
.4316			.127	.4064			.019
.4323	.668	.279		.4105	.929	-0.002	
.4337			.029	.4113			.103
.4343	.660	.230		.4133	.873	+0.014	
.4357			.086	.4140			.148
.4364	.631	.235		.4154	.963	.017	
.4420			.025	.4161			.122
.4427	.535	.247		.4196	.975	.066	
.4441			.027	.4203			.127
.4448	.511	.240		.4217	.989	.073	
.4497			-0.003	.4223			.081
.4503	.566	.211		.4265	10.029	.065	
.4517		.	+0.013	.4273			.002
.4524	.447	.186		.4390	.077	.049	
.4545			.036	.4397			.045
.4552	.418	.175		.4446	.132	.033	.172

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
38047.5468	10.045	+0.005		38085.4755	10.588	-0.025	
.5512	.119	.022		.4768	.679	+0.013	
.5530	.161	.075		.4796	.695	-0.115	
.5544	.183	.076		.4817	.774	.050	
.5585	.237	.034		.4845	.814	.193	
.5600	.214	.010		.4858	.872	.050	
.5637	.264	-0.011		.4897	.907	.017	
.5655	.264	.061		.4915	.953	+0.128	
.5675	.289	.045		.4935	.921	-0.054	
.5718	.328	.032		.4966	.866	.175	
.5738	.319	.040		.4987	.882	.028	
.5752	.340	.019		.5018	.874	.180	
.5783	.344	.050		.5032	.892	.146	
.5800	.343	.057		.5074	.844	.033	
.5818	.354	+0.018		.5088	.924	+0.088	
.5856	.357	-0.006		.5130	.736	-0.043	
.5877	.355	.022		.5150	.723	.059	
.5894	.365	+0.051		.5209	.572	.071	
.5943	.354	.033					
.5971	.335	.009		38086.3820	9.387	-0.069	
.5995	.338	.010		.3857	.451	.062	
.6036	.315	-0.013		.3880	.489	.041	
.6065	.274	.056		.3907	.569	.028	
.6092	.274	.033		.3927	.599	.062	
.6137	.270	.036		.3948	.708	+0.017	
.6158	.265	.030		.3980	.782	-0.091	
.6186	.255	.030		.4001	.860	.082	
.6228	.247	.015		.4018	.912	.093	
.6248	.257	+0.001		.4052	10.156	.139	
.6266	.268	.051		.4067	.293	.109	
.6308	.229	.032		.4087	.386	.056	
.6328	.238	.080		.4123	.564	.103	
.6353	.221	.044		.4137	.643	.088	
.6620	.071	-0.038		.4154	.708	.067	
.6658	.063	.047		.4198	.837	.093	
.6728	.024	+0.023		.4209	.866	.083	
.6748	.019	.031		.4227	.893	.074	
.6765	9.986	.010		.4261	.922	.048	
.6842	.993	.070		.4275	.921	.070	
				.4292	.926	.060	
38085.4372	9.231	-0.044		.4323	.938	.014	
.4408	.261	.161		.4337	.926	.059	
.4422	.284	.212		.4362	.912	-0.075	
.4455	.375	.017		.4400	.892	.066	
.4470	.451	.011		.4421	.891	.052	
.4487	.419	.086		.4453	.845	.060	
.4529	.576	.054		.4497	.795	.044	
.4550	.684	.048		.4515	.786	.043	
.4595	9.899	+0.046		.4532	.777	.037	
.4615	.829	-0.047		.4567	.770	+0.018	
.4633	.814	.117		.5289	.059	.020	
.4650	.932	.029		.5465	9.864	.131	
.4698	10.242	+0.081		.5587	.804	.107	
.4715	.338	.042		.5688	.628	.198	

J.D. 2400000+	V	(B-V)	(U-B)
38086.5775	9.603	-0.130	
38089.4180	9.609	-0.071	
.4225	.625	.048	
.4264	.662	+0.034	
.4319	.637	-0.023	
.4354	.631	+0.011	
.4385	.570	-0.079	
.4458	.544	.042	
.4503	.947	.027	
.4535	.552	+0.013	
.4607	.509	-0.048	
.4663	.512	.051	
.4694	.525	.009	
.4743	.509	.019	
.4765	.502	.008	
.4836	.499	+0.045	
.5378	.335	-0.057	
.5400	.351	.025	
.5458	.335	.100	
.5486	.356	.055	
.5542	.364	.062	
.5576	.363	.103	
.5618	.388	.101	
.5771	.344	.057	
.5792	.375	.056	
.5864	.390	+0.007	
.5907	.401	.023	
38089.5933	9.362	-0.048	
;5983	.368	.025	
38090.5377	9.375	-0.038	
.5413	.353	.022	
.5433	.341	.030	
.5471	.300	.102	
.5492	.312	.071	
.5509	.312	.116	
.5551	.323	.067	
.5569	.328	.048	
.5590	.329	.111	
.5631	.312	.050	
.5954	.387	.030	
.5988	.476	+0.028	
.6018	.304	-0.040	
.6037	.540	.056	
.6076	.682	.048	
.6093	.756	.034	
.6107	.851	.032	
.6141	10.031	+0.032	
.6155	.108	-0.046	
.6170	.199	.064	
.6211	.443	.045	
.6225	.508	.027	
.6238	.558	.053	
.6273	.689	.011	
38090.6287	10.719	-0.042	
.6301	.766	-	
.6337	.848	.044	
.6350	.852	.069	
.6363	.862	.093	
.6391	.902	.049	
.6405	.884	.085	
.6422	.880	.073	
.6454	.877	.069	
.6467	.886	.094	
.6481	.881	.082	
.6523	.864	.061	
.6537	.847	.056	
.6551	.837	.063	
.6583	.823	.093	
38104.3770	9.867	-0.100	
.3808	.831	.118	
.3844	.763	.105	
.3916	.728	.128	
.3937	.654	.236	
.3955	.633	.253	
.3993	.608	.105	
.4010	.501	+0.048	
.4027	.525	-0.051	
.4062	.542	.014	
.4083	.538	+0.046	
.4104	.518	.068	
.4152	.567	-0.034	
.4173	.540	+0.011	
.4190	.564	-0.125	
.4225	.545	.036	
.4243	.524	.032	
.4260	.512	.021	
.4302	.523	.054	
.4322	.522	.044	
.4340	.530	.264	
.4375	.514	.192	
.4479	.555	.238	
.4496	.530	.138	
.4552	.458	.128	
.4569	.503	.257	
.4600	.481	.295	
.4622	.387	.071	
.4645	.458	.277	
.4684	.461	.249	
.4700	.431	.217	
.5645	.294	+0.080	
.5718	.361	-0.259	
38114.4486	9.552	-0.034	
.4531	.569	.019	
.4556	.587	.029	
.4587	.598	.023	
.4608	.616	.012	

J.D. 2400000+	V	(B-V)	(U-B)	J.D. 2400000+	V	(B-V)	(U-B)
38114.4625	9.642	+0.003					
.4663	.664	-0.047					
.4684	.686	.050					
.4702	.721	.033					
.4742	.807	.023					
.4760	.849	.008					
.4774	.918	.003					
.4810	10.025	-0.056					
.4823	.079	.042					
.4840	.153	.026					
.4878	.264	.042					
.4896	.320	.014					
.4913	.367	.008					
.4955	.453	.065					
.4973	.504	.041					
.4990	.529	.040					
.5031	.598	.045					
.5045	.620	.038					
.5067	.614	.032					
.5104	.625	.015					
.5125	.622	.020					
.5142	.598	.021					
.5178	.613	.015					
.5198	.611	.012					
.5219	.611	.004					
.5260	.590	.016					
.5295	.556	.042					
.5320	.554	.021					
.5357	.536	.029					
.5371	.526	.012					
.5392	.510	+0.002					
.5431	.471	-0.030					
.5448	.464	.013					
.5466	.460	.004					
.5497	.447	.006					
.5510	.445	+0.017					
.5528	.427	.013					
.5560	.397	-0.004					