

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS

Number 3423

Konkoly Observatory
 Budapest
 23 January 1990
 HU ISSN 0374 - 0676

PHOTOELECTRIC MINIMA OF ECLIPSING BINARIES

The following table gives the photoelectric minima obtained in the years 1987 - 1989 at the N. Copernicus Observatory and Planetarium in Brno (Czechoslovakia) by means of the Nasmyth type 40-cm telescope.

Measurements are made in the UB_v-system, but as the signal-to-noise ratio in the U-range is not sufficient, we use the reduced BV-system.

Table I gives the type of filter, the heliocentric times of minima, different values of O-C, and abbreviations of the observer's name.

These abbreviations are as follows:

DH : Dalibor Hanžl
 PS : Petr Svoboda
 TH : Tomáš Hudeček
 PP : Petr Pravec

Data for calculating the O-C residuals are taken from the following literature:

O-C (I) : SAC 60, Krakow 1988.

O-C (II) : GCVS, Moscow 1985 - 1987.

Moments of the secondary minima are labeled by "s". As far as the data for calculating the times of the secondary minima were not found in the literature, we use the phase 0.5 for calculating the O-C of the secondary minima (the secondary minimum is supposed to be in mid-phase between the primary ones).

In case the elements in both sources are equal, the O-C 's are also equal (this is indicated by the sign =).

Table I

Star	Filter	Min. hel.	O-C (I) [d]	O-C (II) [d]	Observer
		24. . . .			
RT And	V s	47381.4988	-0.0012	-0.0001	DH/PS
	B s	47381.4974	-0.0026	-0.0013	DH/PS
AB And	V	47063.3371	-0.0130	-0.0107	PS
	B	47063.3371	-0.0130	-0.0107	PS
	V	47413.4897	-0.0067	-0.0043	DH

Table I (cont.)

Star	Filt.	Min. hel. 24...	O-C (I) [d]	O-C (II) [d]	Observer
	B	47413.4903	-0.0061	-0.0037	DH
	U	47413.4903	-0.0061	-0.0037	DH
DS And	V	47770.4524	+0.0093	= +0.0093	DH
	B	47770.4531	+0.0099	= +0.0099	DH
OD Aql	V	47061.3846	-0.0002	= -0.0002	PS/PP
	B	47061.3853	-0.0005	= -0.0005	PS/PP
ST Aqr	V	47819.3133	-0.0112	= -0.0112	DH
	B	47819.3119	-0.0126	= -0.0126	DH
RX Ari	V	47780.5104	-0.0395	-0.0114	DH/PS
	B	47780.5111	-0.0388	-0.0107	DH/PS
SS Ari	V	47512.3685	-0.0013	-0.0748	DH
	B	47512.3664	-0.0034	-0.0769	DH
TY Boo	V	47687.4503	+0.0084	+0.0436	DH
	B	47687.4509	+0.0090	+0.0442	DH
i Boo	V	46916.4221	-0.0008	+0.0904	PS
	B	46916.4207	-0.0006	+0.0182	PS
	U	46916.4165	-0.0048	+0.0140	PS
PV Cas	V s	47760.5309	+0.0099	-0.0203	DH
	B s	47760.5323	+0.0113	-0.0189	DH
GS Cep	V	47414.4346	-0.0149	= -0.0149	DH
	B	47414.4346	-0.0149	= -0.0149	DH
	U	47414.4359	-0.0137	= -0.0137	DH
	V	47776.4546	-0.0639	= -0.0639	DH
	B	47776.4539	-0.0646	= -0.0646	DH
v 787 Cyg	V	47862.2934	-0.0018	= -0.0018	DH
	B	47862.3029	+0.0077	= +0.0077	DH
	U	47862.3002	+0.0050	= +0.0050	DH
DM Del	V	47791.3634	-0.0249	-0.0401	DH
	B	47791.3648	-0.0236	-0.0387	DH
BV Dra	V	47398.4240	-0.0270	-0.0135	DH
	B	47398.4254	-0.0256	-0.0121	DH
TW Dra	V	47782.4061	-0.0242	+0.0168	DH
	B	47782.4068	-0.0235	+0.0175	DH
u Her	V	47611.5207	+0.0171	= +0.0171	DH
	B	47611.5166	+0.0130	= +0.0130	DH
V839 Oph	V	47006.4936	+0.0372	+0.0456	PS
	B	47006.4929	+0.0365	+0.0449	PS
	V	47062.3199	+0.0416	+0.0437	PS/DH
KW Per	V	47415.4417	+0.0106	+0.0059	DH
	B	47415.4410	+0.0099	+0.0052	DH
	U	47415.4410	+0.0099	+0.0052	DH
GR Tau	V	47827.5148	-0.0162	-0.0055	DH
	B	47827.5134	-0.0176	-0.0069	DH
	V	47849.4363	-0.0172	-0.0066	DH/TH
	B	47849.4363	-0.0172	-0.0066	DH/TH
	V s	47856.5454	-0.0104	-0.0021	DH/TH
	V s	47862.5502	-0.0139	-0.0032	DH
	V	47889.4089	-0.0209	-0.0102	DH
	B	47889.4069	-0.0229	-0.0112	DH
RW Tau	V	47525.4486	-0.0103	-0.0311	DH
	B	47525.4486	-0.0103	-0.0311	DH
W UMa	V	46852.3907	-0.0048	-0.0051	PS
FR Vul	V	47713.4343	-0.0083	-0.0091	DH

Remarks:

GR Tau:

In 1989 we gained the complete light curve which, however, has not been treated yet. The first measurement showed that the information given in SAC 60, $D = 1.4^h$, might be incorrect (the light curve combined of six nights is shown in Figure 1).

GS Cep:

Elements given in SAC 60 and GCVS are probably incorrect. Some of the forecasted minima do not appear at all. This fact was found out in 1988 when the star was measured very often. We succeeded in gaining two minima only (both are given in Table I). The star is included in the Brno programme of visual observation of the eclipsing binaries but the measured fall in the range V (0.46 mag), B (0.48 mag) and U (0.47 mag) shows the inconvenience of this star for such observation.

The main features of our measurement survey for this star are summarized in Table II.

Table II

measurement begin	measurement end	forecasted minimum	remarks
2447..	2447..	2447..	
387.385	387.597	387.4295	No minimum appeared, constant brightness.
388.364	388.599	(388.202)	Constant brightness.
391.378	391.597	(391.290)	Constant brightness.
392.381	392.599	(392.062)	A part of rising branch at the beginning of measurement, then constant.
393.384	393.531	(393.606)	Constant brightness.
398.504	398.538	(398.236)	Constant brightness.
401.368	401.424	(401.326)	Constant brightness.
405.519	405.563	(405.186)	Constant brightness.
413.394	413.416	(413.678)	Constant brightness.
414.382	414.535	414.449	Minimum appeared - see the table I.
431.316	431.391	(431.434)	Constant brightness.
432.404	432.436	(432.206)	Constant brightness.
439.458	439.496	(439.154)	A part of rising branch (uncertain measurement because of bad wheather).
451.263	451.440	(451.507)	Constant brightness.
485.384	485.444	(485.474)	Constant brightness.
716.441	716.572	(716.302)	Falling branch.
729.359	729.453	729.426	Rising branch (a part).
770.288	770.328	(770.343)	Constant brightness.
776.386	776.538	776.519	Minimum appeared - see the table I.

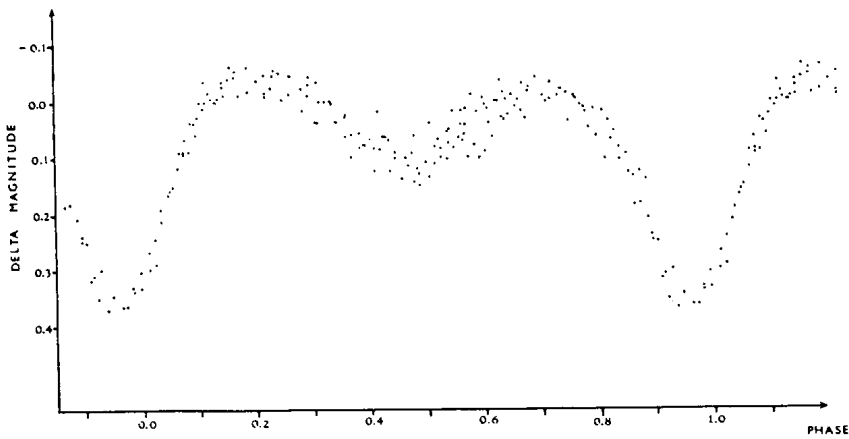


Figure 1. GR Tau , V-range , BRNO 1989 ($M_0=44982.334$; $P=0.429853$)

The forecasted minima which are not included in the interval of measurements are given in brackets. Up to the present time the obtained data have not been published anywhere. They may be obtained directly at the Brno observatory.

DALIBOR HANŽL
Hvězdárna a planetárium Brno
616 00 Brno
Czechoslovakia