

BBSAG Bulletin 78

1985 November 11

111th List of Minima of Eclipsing Binaries

The following table lists 8 photoelectric (underlined) and 352 visual minima obtained mainly during 1985 August to October by the observers

FA	Francesco Acorbi, Soresina, Italy
MAp	Michael Apostolidis, Athens, Greece
RD	Roger Diethelm, Rodersdorf, Switzerland
DE	Demetrius P.Elias, Penteli, Greece
SFe	Stéphane Ferrand, Bougival, France
RG	Robert Germann, Wald, Switzerland
VH	Vincent Hainaut, Tilly, Belgium
GH	Gerold Hildebrandt, Bülach, Switzerland
KL	Kurt Locher, Grüt, Switzerland
PLo	Patrick Louis, Namur, Belgium
GM	George Mavrofridis, Nikea, Greece
EN	Edmond Nozry, Toulouse, France
APs	Anton Paschke, Rüti, Switzerland
SP	Stefan Paschke, Rüti, Switzerland
HP	Hermann Peter, Otelfingen, Switzerland
PR	Philippe Ralin-court, Nantes, France
FS	Felix Schöpfer, Bülach, Switzerland
UST	Urs Stich, Niederglatt, Switzerland
NS	Nikolaos Stoikidis, Larisa, Greece
CV	Constantin Vafiadis, Pireas, Greece
EV	Erwin Verstrepen, Ohey, Belgium

The columns mean

- 1 current number
- 2 1950 right ascension hours and minutes
- 3 1950 declination degrees and tenths
- 4 star name
- 5 p for a primary, s for a secondary minimum
- 6 observed heliocentric Julian date of the minimum, minus 2400000
- 7 observed minus computed date of the minimum, computed by means of the elements of the GCVS....
1985 for stars alphabetically prior to Cygnus
1969 otherwise
- Exceptions are denoted and have been specified in BBSAG Bulletin 76, page 1, cipher 7
- 8 number of observations used, systematically weighted only in the case of the observer APs
- 9 observer, abbreviated as above

Reductions were made mainly using the tracing paper method.

1	2	3	4	5	6	7	8	9
22646	0041+307	UU	And	p	46296.514	+013	6 KL	
22647				p	46299.488	+014	13 HP	
22648				p	46360.418	+006	6 HP	
22649	0154+419	XZ	And	p	46285.418	+005	7 GM	
22650				p	46285.417	+004	9 HP	
22651				p	46319.340	-005	9 GH	
22652				p	46319.340	-005	10 USt	
22653				p	46319.341	-004	10 FS	
22654				p	46319.342	-003	8 KL	
22655				p	46319.349	+004	7 HP	
22656				p	46327.492	+003	8 HP	
22657				p	46361.417	-003	8 HP	
22658	0008+418	DO	And	p	46355.297	+007	5 KL	
22659			<u>WAA</u>	s	46355.640	+014	6 KL	
22660	0032+410	HS	And	p	46321.634	+080	8 KL	
22661				p	46349.513	+102	6 KL	
22662	0208+486	LM	And <u>WAA</u>	p	46327.372	-107	6 KL	
22663	2202-091	XZ	Aqr	p	46298.407	+021	8 KL	
22664	2210-214	AO	Aqr <u>WAA</u>	s	46298.500	+067	6 KL	
22665	2218-203	AT	Aqr	s	46286.454	+014	6 KL	
22666	2224-197	AY	Aqr	p	46346.333	+006	6 KL	
22667	2221-156	BW	Aqr	p	46299.436	+039	7 RD	
22668	2233-010	CX	Aqr	p	46290.613	-006	7 RG	
22669				p	46298.411	+008	6 RG	
22670				p	46298.415	+012	6 HP	
22671				p	46327.316	+002	6 RG	
22672				p	46328.435	+009	7 HP	
22673	2320-162	CZ	Aqr	p	46319.490	-009	8 KL	
22674	2232-201	BE	Aqr	p	46325.424	+009	15 Aps	
22675				p	46348.304	-024	8 Aps	
22676				p	46350.357	-007	12 Aps	
22677				p	46352.404	+004	6 Aps	
22678	1936+065	LT	Aql	p	46328.356	+050	7 KL	
22679	1946+092	OO	Aql	s	46264.457	-004	10 Aps	
22680				s	46298.4121	-0040	7 RD	
22681				p	46321.474	-001	9 Aps	
22682				p	46346.290	-017	15 SP	
22683				p	46346.291	-016	17 Aps	
22684				p	46350.361	-001	9 Aps	
22685	1915+093	V342	Aql	p	46334.342	+027	13 HP	
22686	1936+126	V343	Aql	p	46319.447	-017	12 HP	
22687				p	46332.358	-019	11 HP	
22688				p	46356.334	-022	9 KL	
22689				p	46356.345	-012	10 HP	
22690	2008+102	V346	Aql	p	46255.327	.000	5 NS	
22691				p	46338.300	-004	8 RG	
22692	1949+163	V602	Aql	p	46326.407	+073	13 HP	
22693				p	46329.420	+073	8 HP	
22694	1935+107	V640	Aql <u>WAA</u>	p	46316.321	-109	8 KL	
22695	1958+086	V760	Aql	p	46327.335	-005	6 KL	
22696	1958+142	V761	Aql <u>WAA</u>	p	46326.452	+078	7 KL	
22697	1858-076	V803	Aql	s	46342.282	+012	7 KL	
22698	1958+154	V1075	Aql	p	46326.390	+040	8 KL	
22699			<u>WAA</u>	p	46349.298	+042	6 KL	
22700	1932+158	V1355	Aql	s	46359.240	-022	5 KL	
22701	0201+238	SS	Ar1	p	46321.621	-043	7 RG	
22702				p	46355.328	-034	6 RG	
22703	0303+284	TX	Ar1	p	46306.640	-161	5 KL	
22704	0544+411	XX	Aur <u>WAA</u>	p	46349.642	-335	7 KL	
22705	0542+411	ZZ	Aur	p	46350.442	+009	9 HP	
22706	0510+334	CL	Aur	p	46305.641	+036	5 KL	
22707				p	46350.451	+049	11 HP	
22708	0537+325	FN	Aur	p	46305.598	-514	6 KL	
22709	1525+371	BD+37 ^O 2641		s	46299.442	+025 ^a	7 KL	
22710		Boo		p	46307.338	+031 ^a	10 KL	
22711	0631+823	SV	Cam	p	46308.433	+014	19 Aps	
22712	0447+548	AQ	Cam	p	46327.586	+001	5 KL	
22713	0738+00	AK	Cmi	p	46334.642	-002	8 KL	
22714	0838+234	EF	Cnc	s	46352.683	+551 ^b	5 KL	
22715	2022-131	TY	Cap	p	46299.455	-007	7 HP	
22716				p	46319.356	-034	7 HP	
22717				p	46329.350	-005	8 HP	

1	2	3	4	5	6	7	8	9
22718	0244+694	RZ	Cas	p	45962.523	+001	13	SFe
22719				p	46121.503	+013	19	EV
22720				p	46268.505	-001	20	PLo
22721				p	46274.497	+015	28	EN
22722				p	46280.455	-003	FA	
22723				p	46280.457	-001	24	EN
22724				p	46292.411	+001	8	GM
22725				p	46292.411	+001	21	PR
22726				p	46293.598	-008	12	FA
22727				p	46293.607	+001	25	PLo
22728				p	46298.390	+003	10	APS
22729				p	46298.390	+003	14	PR
22730	0233+711	AB	Cas	p	46298.420	+014	8	HP
22731				p	46350.351	+004	9	RG
22732				p	46350.351	+004	9	HP
22733	0131+707	AH	Cas	p	46354.265	-219	4	KL
22734				p	46355.660	-226	6	KL
22735	0001+574	EY	Cas	s	46298.449	-111	6	KL
22736	2305+538	IR	Cas	p	46285.456	-027	5	GM
22737				p	46332.450	.000	10	HP
22738				p	46349.467	.000	8	HP
22739				p	46360.357	-001	11	HP
22740	2326+603	IS	Cas	p	46331.413	+012	8	HP
22741	2347+529	IV	Cas	p	46327.517	+007	6	HP
22742				p	46329.512	+006	6	HP
22743				p	46349.488	+010	7	HP
22744				p	46360.468	+007	8	HP
22745	0045+606	OR	Cas	p	46299.452	+004	7	HP
22746				p	46319.381	+002	8	HP
22747	0106+612	OX	Cas	s	46299.344	-008	6	RD
22748	2308+589	PV	Cas	s	46295.391	-017	6	RD
22749	0037+500	V523	Cas	s	46311.378	+006	6	KL
22750				s	46350.424	+026	8	HP
22751	0058+816	U	Cep	p	46351.580	+025	5	KL
22752	2145+571	SU	Cep	p	46290.592	-006	6	RG
22753				p	46320.335	-009	6	RG
22754				p	46329.377	+019	9	HP
22755				p	46348.288	-005	8	RG
22756				p	46356.398	-003	11	HP
22757				p	46365.410	-004	7	HP
22758	2217+696	WW	Cep	p	46320.404	-059	6	HP

22759	2320+726	WZ	Cep	p	46306.374	+002	18	AFs
22760				p	46329.329	-002	9	AFs
22761				p	46331.420	+002	10	AFs
22762	2226+659	BR	Cep	p	46296.602	-032	8	KL
22763	2321+650	CM	Cep	WZ p	46291.518	-022	10	KL
22764	2157+607	DK	Cep	p	46321.602	+030	8	KL
22765	2128+650	GI	Cep	p	46292.326	-032	7	GM
22766				p	46321.411	-001	11	HP
22767				p	46350.459	-009	9	HP
22768	2109+575	IO	Cep	p	46331.362	+015	6	KL
22769				p	46362.255	+013	6	KL
22770	0221+809	V358	Cep	p	46276.505	+290 ^d	9	KL
22771				p	46277.448	+288 ^d	13	KL
22772				p	46277.452	+292 ^d	13	DE
22773				s	46290.455	+295 ^d	6	KL
22774				s	46319.529	+298 ^d	7	KL
22775				s	46349.507	+260 ^d	10	KL
22776	0246+016	SS	Cet	p	46305.606	+004	6	KL
22777	0147-211	TW	Cet	s	46306.621	+002	6	KL
22778	0147-199	VY	Cet	p	46316.514	-014	6	KL
22779	0157-232	AA	Cet	p	46307.624	+010	5	KL

a Elements according to BBSAG Bulletin 77, p. 6
b Elements according to BBSAG Bulletin 65, p. 5
c Displaced secondary
d Elements according to BBSAG Bulletin 63, p. 5

22780	2050+354 Y Cyg	p 46293.422	+ .089	23 PR	22836	p 46331.452	- .015	8 HP
22781		p 46305.411	+ .092	15 PR	22837	p 46339.284	- .015	9 APS
22782	2005+462 SW Cyg	p 46285.440	+ .276	5 GM	22838	p 46346.333	- .015	9 HP
22783		p 46349.440	+ .254	9 HP	22839	1143+725 Z Dra	+ .021	8 HP
22784	2021+431 UW Cyg	p 46319.558	+ .040	9 KL	22840	p 46346.306	+ .021	6 KL
22785		p 46326.457	+ .037	12 HP	22841	p 46346.309	+ .024	8 HP
22786	2104+456 VV Cyg	p 46291.591	- .006	6 KL	22842	p 46350.380	+ .023	11 HP
22787	2051+386 WZ Cyg	p 46291.420	+ .030	8 HP	22843	p 46329.436	+ .257	6 KL
22788		p 46332.340	+ .037	9 HP	22844	p 46329.437	+ .257	11 HP
22789		p 46356.304	+ .038	7 HP	22845	1822+589 RZ Dra	- .030	14 APS
22790		p 46360.396	+ .038	11 HP	22846	p 46298.433	- .019	8 HP
22791	2022+468 ZZ Cyg	p 46305.360	- .043	7 HP	22847	p 46308.348	- .019	7 RG
22792		p 46320.446	- .043	9 HP	22848	p 46319.354	- .031	12 APS
22793		p 46339.295	- .052	7 KL	22849	p 46325.419	- .026	8 HP
22794		p 46361.304	- .045	9 HP	22850	p 46325.426	- .019	10 APS
22795	1939+467 BR Cyg	p 46255.409	+ .013	9 NS	22851	p 46335.331	- .029	8 RG
22796		p 46331.374	+ .022	11 HP	22852	1821+475 TZ Dra	- .000	7 RG
22797	2046+539 CG Cyg	p 46308.351	- .034	7 RG	22853	1655+528 AI Dra	- .005	12 PLO
22798		p 46320.350	- .026	7 RG	22854	p 46293.453	+ .003	23 PR
22799		p 46320.358	- .018	8 HP	22855	p 46299.460	+ .015	18 PR
22800		p 46327.289	- .029	6 RG	22856	p 46305.450	+ .011	21 PR
22801		p 46332.348	- .020	10 HP	22857	1922+698 NSV 11987 Dra	- .562	* 11 KL
22802		p 46356.337	- .015	8 HP	22858	p 46320.382	- .574	* 6 KL
22803	1924+293 DX Cyg	p 46296.396	- .051	6 KL	22859	p 46325.296	- .574	* 6 KL
22804	1929+284 EE Cyg	p 46296.518	- .051	7 KL	22860	p 46326.501	- .595	* 6 KL
22805	2007+304 KR Cyg	p 46326.381	- .018	9 HP	22861	p 46331.401	- .607	* 13 KL
22806		p 46331.452	- .017	9 HP	22862	p 46332.632	- .604	* 6 KL
22807	2114+373 V 387 Cyg	p 46272.568	+ .070	7 RG	22863	p 46342.434	- .626	* 8 KL
22808		p 46285.380	+ .071	9 HP	22864	0558+231 RW Gem	- .003	7 KL
22809		p 46326.373	+ .065	6 RG	22865	0648+214 AF Gem	- .030	6 HP
22810		p 46326.386	+ .078	9 HP	22866	1738+330 SZ Her	+ .033	7 RG
22811		p 46328.306	+ .076	7 RG	22867	p 46298.390	+ .039	8 RG
22812		p 46360.336	+ .076	8 HP	22868	p 46298.391	+ .040	7 HP
22813	2027+390 V 456 Cyg	p 46319.443	+ .030	9 HP	22869	p 46325.370	+ .022	11 APS
22814		p 46320.336	+ .031	6 RG	22870	p 46325.389	+ .041	8 HP
22815		p 46327.474	+ .040	9 HP	22871	p 46348.287	+ .033	8 RG
22816		p 46360.449	+ .041	8 HP	22872	1712+308 TU Her	- .048	10 HP
22817	2129+499 V 616 Cyg	p 46299.415	- .193	7 KL	22873	1834+249 B0 Her	+ .020	10 HP
22818	2152+536 V 680 Cyg	p 46298.391	- .033	7 RD	22874	1615+091 CC Her	+ .135	9 KL
22819	2026+586 V 728 Cyg	p 46349.473	+ .103	10 HP	22875	p 46311.334	+ .138	12 HP
22820	2004+308 V 1034 Cyg	p 46285.416	- .014	9 HP	22876	1618+186 CT Her	+ .068	6 HP
22821	2041+383 V 1788 Cyg	46291.0	-1.1	* 6 KL	22877	1755+329 ES Her	- .150	7 KL
22822		46319.1	-1.1	* 6 KL	22878	1820+145 MT Her	+ .044	8 APS
22823		46346.4	-2.0	* 6 KL	22879	p 46320.399	+ .048	17 APS
22824	2136+357 SVS 2262 Cyg	p 46349.370	+ .024	10 KL	22880	p 46285.407	- .233	7 GM
22825	2154+384 SVS 2264 Cyg	p 46292.391	- .078	* 6 KL	22881	p 46292.445	- .238	6 GM
22826	2035+181 W Del	p 46332.341	+ .158	6 KL	22882	p 46299.499	- .227	15 HP
22827		p 46332.355	+ .172	9 HP	22883	p 46280.414	+ .122	7 RG
22828	2034+083 TT Del	p 46326.329	+ .098	8 HP	22884	p 46327.405	+ .106	7 HP
22829	2102+130 TY Del	p 46299.386	+ .044	9 HP	22885	p 46331.316	+ .100	8 HP
22830		p 46361.316	+ .036	11 HP	22886	p 46348.300	+ .109	6 HP
22831	2043+110 AV Del	p 46321.397	- .028	15 HP	22887	p 46365.284	+ .119	8 HP
22832	2251+045 FZ Del	p 46291.507	- .016	16 APS	22888	1822+251 V 342 Her	- .016	6 RG
22833		p 46295.4242	- .0153	10 RD	22889	1655+337 V 359 Her	- .110	8 HP
22834		p 46328.317	- .017	12 APS	22890	p 46326.352	- .136	7 RG
22835		p 46328.319	- .016	8 HP	22891	p 46286.488	- .050	24 FA
					22892	2249+374 SW Lac	- .179	12 APS
					22893	p 46299.4058	- .1784	10 #
					22894	2228+544 TW Lac	- .162	10 HP

#students' teamwork
Basel University

*elements accord-
ing to BBSAG
Bulletin 72, 4

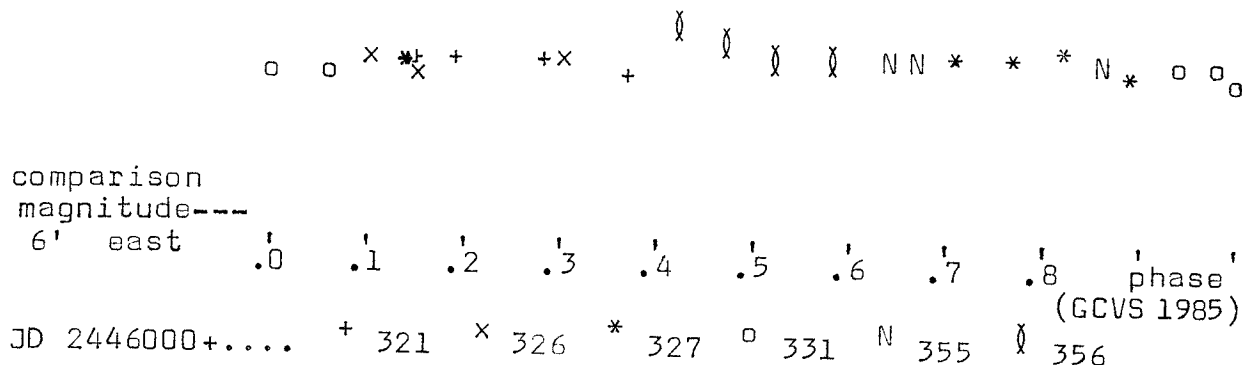
*elements accord-
ing to BBSAG
Bulletin 68, 6
*elements accord-
ing to ¶. 3, ¶. 3,
663 (1979)
*elements accord-
ing to ¶. 3, ¶. 3,
685 (1979)

M i s s e d M i n i m a o f M N A u r i g a e

As has been independently suggested by J. Manek (Brno Internal Circular 1985 September 25), the GCVS 1985 period of this probable eclipsing binary, O^d55995, is erroneous. Identifying with Weber's original chart IBVS 321 (1968), I was able to cover all phases visually during 6 nights in 1985 September and October, not meeting a single trace of light weakening, as plotted in Figure 74.

K. Locher

Fig.74 comparison
magnitude---
3' west



T h e P e r i o d o f B G P e g a s i

BG Peg was found to be variable by Tsessevich in 1931, who observed the star until 1944, obtaining 11 minima (see table 17), and published the elements (A) 2427386.362 + 1.95246E, corrected by a least square solution to (B) 2427386.3705 + 1.9524652E. A typical Algol type light curve, based on 387 estimations, was inferred.

9 further minima were then observed by Szafraniecka (see table 17), who published the improved elements (C) 2436453.509 + 1.95238E. These are the elements given in the GCVS 1969.

Several observations have been made in the last years: 8 observations of 4 different minima published in Brno and 10 minima by the BBSAG, included in table 17 that contains all 40 minima today available. They are all thought to be primary. The elements (A) and (C) give a difference of about 0.25 period today. Both are confirmed! The minima published in Brno fit to the elements (C). From those published by BBSAG 2 fit to (C), 5 to (A), and 3 to none at all.

The catalogued photographic magnitudes of 10.5, 11.8, and 11.1 contradict the curve published by Tsessevich, where the secondary minimum is very shallow (less than 20 percent of the depth of the primary).

I have observed BG Peg visually from August to November 1985, using the finder map originally published in Brno (no. 22 of the IVth series) and reproduced here as Figure 75. The results are shown in Figure 76 (based on the elements by Szafraniecka and the GCVS). The diagram shows 4 minima within this period. Less striking, but still evident is that the star remains fainter than the comparison B for most of the time.

CONCLUSION :

The period of BG Peg is probably half the value accepted until now, and the variability not of the Algol type.

Trying to interpret the published minima now, we can find the following:

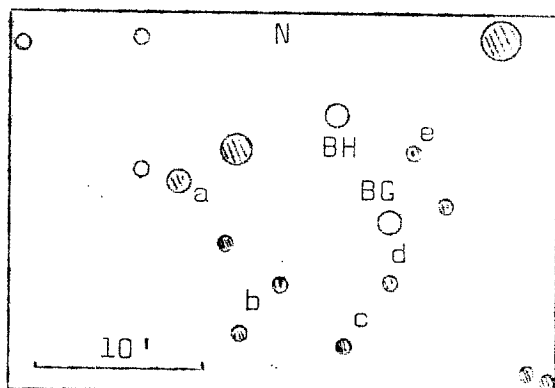
- The published minima with O-C values of about $\frac{3}{4}$ period are secondary.
- The elements (C) of Szafraniecka give the primary minima(O-C 0.03).
- The elements (A) of Tsessevich fit better than (C), if we do not distinguish between primary and secondary minima.
- The elements (B) are worse than both (A) and (C).

A. Paschke

Table 17

O	n	observer	O-C	reference
2426562.434		Tsessevich	1.952	(1) Izvestija Astronomicheskoi
26564.378:		"	1.944	(1) Observatorii Odessy IV, 2,
26568.295		"	0.003	(1) 281 (1954)
26570.244		"	1.952	(1)
26572.215:		"	0.018	(1)
26603.443		"	0.007	(1)
26605.384		"	1.948	(1)
26607.332		"	1.943	(1)
26978.308		"	1.952	(1)
27386.362	74	Piotrowski	1.942	(2) Acta Astronomica c, 2, 63
27390.267		Tsessevich	1.942	(1)
27710.474	37	Piotrowski	1.946	(3) Acta Astronomica c, 2, 80
31287.397		Tsessevich	0.009	(1)
33872.449	12	Szafraniecka	0.004	(4) Acta Astronomica c, 5, 9
34239.496	25	"	1.941	(5) Acta Astronomica c, 5, 51
34649.498	24	"	1.927	(6) Acta Astronomica c, 5, 189
34979.467::11		"	1.930	(7) Acta Astronomica c, 5, 193
35346.519	17	"	1.919	(8) Acta Astronomica c, 6, 141
35397.283	13	"	1.920	(8)
35719.430:	19	"	1.911	(9) Acta Astronomica c, 7, 188
36453.509	18	"	1.965	(10) Acta Astronomica c, 9, 48
38675.320	13	"	1.776	(11) Acta Astronomica c, 16, 157
42777.269	10	Diethelm	1.607	(12) BBSAG Bulletin 25, 2
43431.317	10	"	1.581	(13) BBSAG Bulletin 35, 5
44134.412	9	Peter	1.790	(14) BBSAG Bulletin 45, 4
44136.339	7	Peter	1.764	(14)
44495.348	13	Kucera	1.521	(15) Contributions Brno 23
44817.505	31	Wagner	1.522	(16) Contributions Brno 26
44817.521	16	Slatinsky	1.538	(16)
44878.442	8	Locher	1.933	(17) BBSAG Bulletin 56, 5
44917.358	10	Peter	1.800	(18) BBSAG Bulletin 57, 4
45333.355	9	Germann	1.922	(19) BBSAG Bulletin 65, 4
45532.518	9	Germann	1.935	(20) BBSAG Bulletin 67, 3
45557.466	6	Berka	1.501	(16)
45557.471	28	Wagner	1.506	(16)
45557.473	22	Svoboda	1.508	(16)
45557.473	16	Svoboda	1.508	(16)
45645.316	23	Silhan	1.490	(16)
45991.322	7	Germann	1.910	(21) BBSAG Bulletin 74, 5
46034.276	8	"	1.910	(21)

Fig. 75



next
page
Fig. 76

BG Peg 36453.509 1.95238

- 298
- ◆ 299
- ◻ 301
- ◻ 311
- ⊙ 321
- ⊙ 327
- x 328
- + 330
- Y 331
- † 332
- x 348
- z 350
- x 352
- ◻ 354
- 355
- 356
- ◆ 358
- ◻ 372
- ▲ 373
- x 376
- ⊙ 377
- x 381

