

COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 5263

Konkoly Observatory
Budapest
20 April 2002

HU ISSN 0374 – 0676

CCD TIMES OF MINIMA OF FAINT ECLIPSING BINARIES III

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Observatory and telescope:	
16" Newton telescope (f/1750 mm) at N. Copernicus Observatory and Planetarium in Brno	

Detector:	CCD camera SBIG ST-7, Peltier cooling, KAF1600 chip, 9' × 13' FOV, 255 × 382 pixels.
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Method of data reduction:	
Reduction of the CCD frames was made with a software package Munidos ¹ .	

Method of minimum determination:	
The minima times were computed using several procedures written by A. Gaspani (1995) based on artificial neural networks.	

Observed star(s):							
Star name	GCVS type	Coordinates (J2000)		Comp. star	Ephemeris		Source
		RA	Dec		E 2400000+	P [day]	
UU And	EA/SD	00 43 45	+30 56 20	2275.0851 [†]	41650.340	1.486296	1
LM And	EB/SD	02 11 09	+48 51 35	3289.1989	43837.496	0.76123	1
UU Aqr	SR	22 09 06	-03 46 18	5227.0328	46347.2667	0.163579089	2
GK Aqr	EW/KW	22 19 57	-00 39 47	5225.1106	45233.292	0.3274097	3
V416 Aql	EA/SD	19 33 39	+00 32 23	0478.2264	25535.322	1.338052	1
V631 Aql	EA/SD	19 35 46	+12 03 24	0975.15535423	29163.326	1.155125	1
V770 Aql	EA/SD:	20 03 09	+09 50 15	1076.0483	28746.408	1.59289	1
V784 Aql	EW/KW	20 07 07	+13 29 59	1084.1623	51465.3278	0.587680	4
V873 Aql	EW/KW:	18 45 01	+00 34 04	0447.0372	38651.325	0.3575706	1
V919 Aql	EB/KE:	19 22 56	-01 02 32	5131.1016	35369.358	0.797102	1
V1355 Aql	EB	19 33 52	+15 56 28	1601.1550	35428.2445	0.5157965	1
EQ Aur	EA/SD:	06 50 27	+35 21 47	1200.05182374	28835.440	3.42958	1
FW Aur	EA/SD	05 52 10	+30 12 44	2406.0277	29335.274	2.55997	1
HU Aur	EB/KE	04 39 04	+34 39 24	2381.1365	26707.370	1.408010	1
QT Aur	IS:	06 16 28	+39 53 24	2930.1174	39026.554	1.0895	5
V364 Aur	E	05 30 27	+46 20 15	3359.1354	38849.342	0.69903	5
V379 Aur	EA/SD	06 21 30	+41 51 01	2935.2663	39026.564	1.351036	5
TU Boo	EW/KW	14 04 58	+30 00 01	2545.1000	50182.4799	0.3448733	1
TY Boo	EW/KW	15 00 47	+35 07 54	2568.0991	45768.624	0.418034	1
AC Boo	EW/KW	14 56 28	+46 21 44	3474.0835	29111.508	0.960271	1
AR Boo	EW/KW:	13 48 10	+24 55 28	0199.0233	50182.4799	0.3448733	6

¹Hroch, F., Novák, R., 1997, MUNIDOS, <http://munipack.astronomy.cz/>

[†]The names of the comparison stars are from the GSC and USNO A2.0 respectively

Observed star(s):							
Star name	GCVS type	Coordinates (J2000)		Comp. star	Ephemeris		Source
		RA	Dec		E 2400000+	P [day]	
XZ Cam	EA/DS	05 17 13	+75 50 06	4511.0514 [†]	45449.6	0.7396	1
AQ Cam	EA/SD	04 51 18	+54 56 01	3737.1283	42950.490	2.4642074	1
RY Cnc	EA/SD	08 39 55	+19 49 18	1395.2057	51427.4063	0.610510	1
TY Cnc	EA/SD	08 47 10	+08 24 25	0810.0036	51375.4528	0.404194	1
AE Cnc	EA/SD	08 48 07	+09 10 21	0810.2160	50895.5095	2.315268	1
EH Cnc	EW/KW	08 26 18	+20 52 50	1391.1356	45768.624	0.418034	7
YZ CVn	EA/SD	13 56 49	+28 44 20	2005.0526	29111.508	0.960271	1
AO CMi	EA/SD	07 10 04	+01 58 29	0167.0352	45241.471	0.4728289	1
AL Cas	EW	02 13 50	+70 09 01	4315.0452	45449.6	0.7396	1
KT Cas	EA/SD	01 04 44	+54 07 04	3668.1279	42950.490	2.4642074	1
MM Cas	EA/SD	00 54 31	+54 26 16	3672.0189	51427.4063	0.610510	1
MR Cas	EW/KW	00 11 33	+58 05 41	3660.0114	51375.4528	0.404194	1
MS Cas	EA/SD	00 11 54	+60 06 35	4014.1509	50895.5095	2.315268	1
V345 Cas	EB/SD:	23 08 37	+54 08 16	1425.14652972	51876.534	0.358519	1
V364 Cas	EA	00 52 43	+50 28 11	3270.0096	37647.022	1.016412	1
V851 Cas	EA:	23 38 10	+53 42 37	1425.15346136	29111.508	0.960271	8
IM Cep	EB	23 13 09	+62 41 56	4283.0363	29931.265	0.921589	1
V358 Cep	EB/KW	02 27 26	+81 10 13	4507.0232	45241.471	0.4728289	9
CC Com	EW/KW	12 12 06	+22 31 55	1986.1673	39533.5830	0.22068628	1
DD Com	EW/KW	12 28 46	+21 43 25	1447.1638	37779.410	0.2692061	1
DG Com	EB/SD	12 30 10	+20 59 26	1447.2432	37795.500	0.986615	1
EQ Com	EB	12 58 52	+18 00 49	1453.0621	37705.584	0.361867	1
GM Cyg	EA/SD	20 04 16	+38 07 46	1275.13264384	32408.522	4.745802	1
KV Cyg	EB/SD	20 15 38	+36 47 40	2684.1856	29468.389	2.8389936	1
PW Cyg	EA	19 56 32	+39 30 35	1275.12823576	32256.665	2.021779093	1
QS Cyg	E/KE	19 57 40	+38 48 21	3137.1978	23730.358	1.044000	1
QU Cyg	E	19 58 28	+38 13 30	3137.3455	24026.509	0.3469103	1
QX Cyg	E/DW	19 58 35	+38 14 36	1275.12938182	23352.335	0.89961	1
V454 Cyg	EB/SD	20 15 57	+37 30 29	2684.0631	28725.469	2.3168937	1
V484 Cyg	EA/SD	20 00 41	+35 14 20	2678.0746	28097.376	1.293825	1
V502 Cyg	EW	20 26 28	+42 41 37	3160.0134	38299.309	0.566958	1
V681 Cyg	EA	21 55 26	+48 29 28	3608.0824	25911.530	3.40429	1
V693 Cyg	EA	20 07 47	+39 43 59	1275.13438660	32647.7865	1.1347738	1
V704 Cyg	EW	21 28 12	+45 37 38	3590.0282	37939.409	0.570704	1
V706 Cyg	EB	21 35 55	+40 50 34	3187.1613	40116.429	0.46625592	1
V711 Cyg	EA/SD	21 51 16	+48 02 48	1350.15107073	32802.447	0.826757	1
V842 Cyg	EA/SD	19 22 58	+27 46 03	1232.0135	35391.312	0.8591372	1
V865 Cyg	EW/KW	19 27 24	+33 03 09	1200.11599656	34238.2430	0.36530095	1
V880 Cyg	EA/KE:	19 31 27	+33 39 20	1200.11885216	33857.404	1.0600316	1
V906 Cyg	EW/KW	19 34 57	+34 38 40	1200.12133312	31962.5859	0.365166713	1
V907 Cyg	EW/KW	19 35 30	+29 45 48	2150.1562	39029.450	0.426056	1
V931 Cyg	EW/KW	19 39 14	+29 46 09	2150.1262	34134.4975	0.34149157	1
V961 Cyg	EA	19 43 58	+32 52 16	2660.2383	34237.401	2.0378068	1
V963 Cyg	EA/DW:	19 44 06	+31 41 52	2656.2509	34629.397	0.69733397	1
V970 Cyg	EB	19 44 56	+28 15 19	2151.4375	35317.509	0.5209495	1
V1004 Cyg	EB	19 50 29	+33 08 41	2673.0440	34626.437	0.68569997	1
V1010 Cyg	EA	19 53 45	+29 34 29	2152.0476	32764.524	2.4069968	1
V1047 Cyg	EA/SD	20 17 42	+52 57 24	3937.1903	27368.392	0.929658	1
V1048 Cyg	EA/SD	20 23 07	+52 32 44	3937.2045	27692.516	0.742224	1
V1130 Cyg	EA/SD	19 34 04	+39 42 43	3139.0735	32821.8019	0.562561247	1
V1321 Cyg	EA	20 23 35	+41 31 45	3160.0571	36808.378	0.3640901	1
V1414 Cyg	EA/SD	22 01 20	+47 36 11	3609.2600	29112.380	0.703126	1
V1580 Cyg	EA/SD	19 44 10	+45 27 29	1350.10973430	42653.610	1.811443	1
V1787 Cyg	EA	20 37 47	+55 16 29	3954.0991	45449.6	0.7396	10
V1908 Cyg	EA/SD	21 31 39	+33 49 53	2712.2594	42950.490	2.4642074	11
V2239 Cyg	EA	20 15 18	+37 31 44	2684.0631	51427.4063	0.610510	12
V2240 Cyg	EW	20 15 56	+37 27 16	2684.0631	51375.4528	0.404194	13
BI Del	EA/SD	20 27 38	+14 20 10	1099.0251	50895.5095	2.315268	1

[†]The names of the comparison stars are from the GSC and USNO A2.0 respectively

Observed star(s):							
Star name	GCVS type	Coordinates (J2000)		Comp. star	Ephemeris		Source
		RA	Dec		E 2400000+	P [day]	
BO Del	EA/SD	20 39 18	+14 22 38	0975.19384585 [†]	51876.534	0.358519	1
Z Dra	EA/SD	11 45 29	+72 14 56	4396.1221	37647.022	1.016412	1
TW Dra	EA/SD	15 33 51	+63 54 24	4184.0387	43069.903	0.470681	1
XY Dra	EA/SD	18 18 16	+55 03 30	3908.1350	50895.5095	2.315268	14
TZ Gem	EA/SD	06 37 36	+19 36 17	1337.0335	28495.75	1.6777103	1
AV Gem	EA/SD	06 42 01	+13 24 45	0758.1933	27832.6099	1.2216548	1
EG Gem	EA/SD	06 57 51	+13 08 32	0760.1254	27344.635	1.273392	1
GM Gem	EA	07 05 31	+10 38 23	0753.1814	30375.535	1.35967	1
HR Gem	EA/SD	06 12 17	+24 42 13	1881.1349	30319.688	1.068963	1
KQ Gem	EB/KW	06 43 50	+15 53 56	1330.1192	29231.515	0.4079925	1
KV Gem	RRC:	06 47 12	+15 43 17	1330.0101	51876.534	0.358519	4
AM Her	AM/XRM+E	18 16 14	+49 51 56	3533.1026	43014.71266	0.128927	1
DH Her	EA/SD	18 47 33	+22 50 34	2108.1438	26575.456	4.779161	1
ES Her	EB/KE:	17 56 50	+32 54 42	2612.1184	44770.512	0.7820304	1
V502 Her	EW/KW	17 35 50	+32 19 10	2610.2196	30938.493	0.3692768	1
V643 Her	EA/SD	18 33 10	+23 22 44	2106.0840	36069.386	1.223110	1
V719 Her	RRC:	17 09 52	+42 56 07	3084.0570	41598.278	0.335870	1
DE Hya	EA/SD	08 27 47	+05 38 38	0209.0024	31149.151	4.227678	1
CG Lac	EA/SD	22 44 58	+49 06 54	3629.0902	29627.255	0.8193938	1
EX Lac	EA/SD:	22 41 04	+52 27 30	3632.3045	24795.53	1.739293	1
GH Lac	EA	22 39 35	+47 14 40	3624.0346	25423.506	0.532645	1
HW Lac	EA	22 05 42	+51 53 44	3617.0930	34011.340	2.0307782	1
HX Lac	EW	22 06 09	+49 32 09	3613.2498	25243.115	0.5274659	1
IP Lac	EA	22 08 09	+51 36 13	3618.0924	33861.525	0.8520105	1
KO Lac	EA/SD	22 14 31	+53 29 02	3982.2126	33206.445	1.0260728	1
LU Lac	EW/KW	22 21 42	+51 22 04	3619.3885	33513.5649	0.29880135	1
NR Lac	EB	22 29 21	+49 41 59	3615.0868	33873.638	0.6048038	1
NS Lac	EA	22 29 30	+49 59 41	3615.0269	34366.332	1.0155663	1
V344 Lac	EW/KW	22 18 47	+51 59 16	3618.2138	45222.5635	0.39222768	1
Y Leo	EA/SD	09 36 52	+26 13 58	1962.1299	45436.451	1.6861020	1
UU Leo	EA/SD	09 47 50	+12 59 09	0834.0945	45397.456	1.6797409	1
VZ Leo	EA/SD	09 26 49	+16 36 15	1403.0723	31164.316	1.089906	1
BL Leo	EW/KW	11 45 33	+24 46 20	1985.0975	44648.756	0.2819306	1
BW Leo	EW/KW	11 32 09	+17 19 26	1438.1475	38111.429	0.337221	1
CE Leo	EW/KW	11 44 03	+23 20 21	1985.1274	45047.4325	0.303429	1
AH Lyn	EA	08 42 18	+37 11 08	2490.0592	37647.022	1.016412	15
AH Lyr	EB/SD	19 13 01	+27 16 28	2131.0311	27845.436	1.0307101	1
DU Lyr	EB/D	19 03 50	+30 08 14	2640.1990	29784.470	0.83700	1
DZ Lyr	EA/SD	19 10 52	+27 07 01	2131.1067	25439.420	1.8364125	1
FH Lyr	EA/SD	19 11 28	+36 39 52	2650.0770	45554.400	1.589240	1
GZ Lyr	EA/SD	19 10 31	+27 55 11	2131.2932	38562.423	1.3294322	1
IP Lyr	EB	18 23 20	+33 10 38	2627.1309	44461.411	0.4728057	1
PY Lyr	EW/KW	19 20 26	+28 56 47	2136.1185	45119.418	0.3857582	1
V361 Lyr	E	19 02 31	+46 58 27	3545.2244	44523.307	0.309616	1
V401 Lyr	E	19 14 15	+38 26 58	3121.1353	38204.475	0.839361:	1
V404 Lyr	EB/SD:	19 19 06	+38 21 60	3121.1451	35836.462	0.73094585	1
TV Mon	EA/SD	06 28 23	+05 12 50	0141.1131	44225.475	4.179742	1
VX Mon	EA/SD	06 31 00	+09 18 21	0733.2665	25300.34	1.62967	1
AY Mon	EA/SD	06 53 17	+09 08 21	0975.0411	28247.464	2.144235	1
V532 Mon	EW:/KW:	07 04 30	-00 21 03	4814.1217	34769.3467	0.46698470	1
EG Ori	EA/SD	06 11 06	+16 19 12	1314.0765	25245.41	1.163166	1
FH Ori	EA/SD:	05 23 17	+04 16 46	0109.2499	25900.387	2.15116	1
GU Ori	EA	06 10 05	+12 49 22	0738.0513	43069.903	0.470681	16
QV Ori	EA	05 50 08	+19 58 50	1307.0821	30258.610	1.748815	1
V645 Ori	EA/SD	06 15 32	+15 33 58	1314.1673	28251.328	1.040442	1
V648 Ori	EA/DM	04 52 33	+06 19 26	0096.0705	25997.310	1.626468	1
BY Peg	EW/KW	21 38 55	+28 06 48	2201.0007	45565.518	0.3419372	1
CC Peg	E	21 39 42	+28 24 56	1125.18643667	24791.68	0.60563	1

[†]The names of the comparison stars are from the GSC and USNO A2.0 respectively

Observed star(s):							
Star name	GCVS type	Coordinates (J2000)		Comp. star	Ephemeris		Source
		RA	Dec		E 2400000+	P [day]	
CE Peg	E	21 40 51	+25 09 40	2193.1160 [†]	24789.60	0.64202	1
EY Peg	EA/SD	23 15 23	+16 46 58	1712.0522	36057.518	0.65678	1
WY Per	EA/SD	03 38 25	+42 40 41	2870.1440	46002.360	3.3271615	1
DK Per	EB/SD	02 23 47	+57 59 24	3694.0207	42492.373	0.898876	1
II Per	EB/KW	04 29 37	+44 25 32	2891.2911	30257.550	0.479854	1
QU Per	EA/SD	03 05 54	+40 39 35	2851.1285	36082.582	2.400936	1
V366 Per	EA/SD	02 44 09	+36 34 40	2337.0281	38642.608	1.4219831	1
DK Sge	EW	20 14 01	+21 22 09	1630.0513	35630.400	0.6218188	1
EI Sge	EW/KW	19 59 07	+19 27 56	1624.0174	36724.419	0.3882480	1
FL Sge	EA/SD	20 13 23	+18 28 19	1050.16885687	29071.474	2.09290	1
BI Ser	EA/SD:	15 56 01	+17 30 32	1499.0982	46264.414	1.204882	1
CX Ser	EA/SD:	15 23 35	+02 35 18	0341.0086	31213.490	0.9972918	1
AQ Tau	EA/SD:	04 55 58	+27 53 13	1840.0998	29651.774	1.215904	1
EN Tau	EA/SD:	05 56 42	+25 14 27	1867.0149	26003.435	1.239029	1
ES Tau	EA/SD	05 29 26	+28 45 56	1125.02463844	33184.38	0.909794	1
V407 Tau	EA/SD	04 10 56	+26 17 57	1822.0039	36522.267	2.051133	1
UX UMa	EA/WD+NL	13 36 41	+51 54 50	3469.0867	37432.8204	0.19667128	1
VV UMa	EA/SD	09 38 07	+56 01 04	3810.1515	45815.3365	0.687380	1
AW Vir	EW/KW	13 27 32	+03 02 28	0303.1038	45022.645	0.35399695	1
AX Vir	EB/KE	13 27 45	+03 52 28	0303.0397	27570.444	0.7025262	1
DY Vir	EA/SD	12 19 18	+09 22 21	0873.0348	38901.411	0.934280	1
AW Vul	EA/SD:	20 29 00	+24 48 03	2160.1359	46285.465	0.80645141	1
AX Vul	EA/SD:	20 33 08	+24 52 05	1125.16301707	44853.390	2.0248386	1
BG Vul	EW/KW	21 19 27	+22 03 25	1662.1576	24767.70	0.403252	1
BI Vul	EW/KW	21 22 49	+27 01 59	2195.1519	44757.9270	0.251818	1
BK Vul	EW/KW	21 25 24	+27 51 30	2195.2186	24767.70	0.45347	1
BM Vul	EW/KW	21 30 41	+25 08 02	2192.0646	24769.66	0.377052	1
BT Vul	EA	20 23 05	+27 28 36	2164.0245	35402.180	1.141200	1
FF Vul	E/KW	20 23 10	+25 43 42	2160.0239	35686.45	0.444986	1
FM Vul	EB/KE:	19 31 47	+27 08 03	1125.12974394	43755.409	0.7846407	1
FR Vul	EA	19 36 21	+26 45 51	2146.4529	34981.3980	0.94185866	1
GI Vul	EB	19 42 38	+26 38 28	2147.3108	35066.263	0.4814832	1
GV Vul	EA	19 49 23	+20 39 12	1050.15074394	27546.551	1.01482	1
NO Vul	EW/KW	19 34 40	+20 36 38	1609.1367	46346.311	0.3707685	1

Source(s) of the ephemeris:

1.: Kholopov et al., 1985; 2.: Goldader & Garnavich, 1989; 3.: Kurochkin, 1986; 4.: Zejda, 2001; 5.: Splittgerber, 1985; 6.: Wolf et al., 1998; 7.: Figer el al., 1985; 8.: Busch & Häussler, 1990; 9.: Diethelm, 1990; 10.: Locher, 1983; 11.: Zemljannikova, 1986; 12.: Šafář, 1999b; 13.: Šafář, 1999a; 14.: Šafář, this paper; 15.: Kinman et al., 1982; 16.: Samolyk, 1985

Times of minima:

Star name	Time of min.	Error	Type	Filter	$O - C$	Rem.
	HJD 2400000+					
UU And	51449.5124	0.0025	I	—	0.0229	JŠ
LM And	51433.2645	0.0020	I	—	0.2156	MZ, JŠ; normal. min.
UU Aqr	51377.5295	0.0003	I	—	0.0422	JŠ
GK Aqr	51363.4798	0.0025	I	—	0.0960	JŠ
V416 Aql	51378.4241	0.0055	I	—	-0.0342	MZ; normal. min.
V631 Aql	51379.3987	0.0030	I	—	-0.4464	JŠ
V770 Aql	51378.4994	0.0038	I	—	0.3103	MZ
V784 Aql	51394.4286	0.0033	I	—	0.3106	MZ
	51399.5048	0.0033	II	—	0.0002	MZ; normal. min.
	51404.5000	0.0037	I	—	0.0047	MZ
	51465.3293	0.0022	II	—	0.0293	MZ
	51467.3831	0.0063	I	—	-0.0069	MZ

[†]The names of the comparison stars are from the GSC and USNO A2.0 respectively

Times of minima:						
Star name	Time of min. HJD 2400000+	Error	Type	Filter	$O - C$ [day]	Rem.
V873 Aql	51331.5110	0.0015	I	—	0.0174	JŠ
	51394.4477	0.0028	I	—	0.0217	MZ
V919 Aql	51449.3166	0.0026	I	—	0.0200	JŠ
V1355 Aql	51392.4935	0.0025	I	—	-0.1685	JŠ
EQ Aur	51449.6017	0.0020	I	—	-0.4888	JŠ; normal. min.
FW Aur	51481.5307	0.0026	I	—	-0.0438	JŠ
HU Aur	51195.4578	0.0020	I	—	-0.0221	MZ
QT Aur	51258.4013	0.0021	I	—	0.0308	MZ; normal. min.
V364 Aur	51195.5263	0.0030	I	—	-0.0836	MZ; normal. min.
V379 Aur	51465.4789	0.0043	I	—	-0.0736	MZ; normal. min.
TU Boo	51272.4290	0.0020	I	—	-0.0845	MZ
TY Boo	51272.3590	0.0022	I	—	-0.0853	MZ; normal. min.
AC Boo	51374.4289	0.0028	I	V	-0.0089	MZ
AR Boo	51284.3511	0.0015	II	—	-0.0273	JŠ
	51277.4539	0.0025	I	—	-0.0486	JŠ
	51270.5551	0.0021	I	—	0.1369	JŠ
XZ Cam	51237.4878	0.0064	I	—	0.1064	MZ; normal. min.
AQ Cam	51535.3736	0.0060	I	—	0.0297	MZ
RY Cnc	51195.5711	0.0020	I	—	0.0378	MZ
	51241.4742	0.0030	I	—	0.0373	JŠ
TY Cnc	51193.4325	0.0140	I	—	-0.1857	MZ
AE Cnc	51193.5731	0.0019	I	—	-0.0446	MZ,DH; normal. min.
EH Cnc	51193.4883	0.0024	I	—	0.0371	MZ
	51241.3499	0.0030	II	—	0.0338	JŠ
	51284.4064	0.0023	II	—	0.0328	JŠ
	51270.4020	0.0026	I	—	0.0325	JŠ
YZ CVn	51288.3975	0.0019	I	—	-0.0065	MZ
AO CMi	51237.3167	0.0104	I	—	-0.0934	MZ; normal. min.
AL Cas	51433.5660	0.0024	I	—	-0.0099	JŠ
KT Cas	51449.4972	0.0030	I	—	-0.1172	JŠ
MM Cas	51484.5827	0.0028	I	—	0.0607	JŠ
MR Cas	51377.3956	0.0023	I	—	-0.0249	JŠ
MS Cas	51484.4826	0.0034	I	—	0.0373	JŠ
	51518.4949	0.0096	I	—	0.0402	MZ; normal. min.
V345 Cas	51484.4329	0.0045	I	—	-0.0218	JŠ
	51535.4022	0.0026	I	—	-0.0206	MZ
V364 Cas	51433.5553	0.0030	I	—	-0.0223	JŠ
V851 Cas	51375.4178	0.0025	I	—	0.0267	JŠ
IM Cep	51331.3974	0.0020	I	—	-0.0858	JŠ
V358 Cep	51237.4391	0.0045	I	—	0.0248	MZ
CC Com	51274.4135	0.0017	II	—	-0.0106	JŠ
	51270.3329	0.0019	I	—	-0.0085	JŠ
	51272.5396	0.0017	I	—	-0.0087	MZ; normal. min.
DD Com	51284.3823	0.0011	I	—	-0.0209	JŠ
	51288.3587	0.0017	I	—	-0.0826	MZ; normal. min.
	51288.4904	0.0028	I	—	0.0491	MZ; normal. min.
DG Com	51288.4061	0.0023	I	—	-0.0406	MZ
EQ Com	51277.4220	0.0037	I	—	0.0162	JŠ
	51272.3499	0.0073	I	—	0.0102	MZ
GM Cyg	51277.5663	0.0019	I	—	-0.2645	JŠ
KV Cyg	51331.5191	0.0023	I	—	0.0404	JŠ
PW Cyg	51449.3761	0.0044	I	—	-0.0378	JŠ
QS Cyg	51399.4764	0.0036	I	—	-0.0136	MZ
QU Cyg	51435.4689	0.0022	I	—	-0.0760	MZ
	51399.3901	0.0026	I	—	-0.0761	MZ; normal. min.
	51399.5637	0.0027	I	—	0.0975	MZ; normal. min.
QX Cyg	51467.2123	0.0134	I	—	0.2656	MZ; normal. min.

Times of minima:						
Star name	Time of min. HJD 2400000+	Error	Type	Filter	$O - C$ [day]	Rem.
V454 Cyg	51375.4166	0.0030	I	—	-0.0052	JŠ
	51433.3395	0.0035	I	—	-0.0047	JŠ
V484 Cyg	51378.5600	0.0036	I	—	0.0970	MZ,DH; normal. min.
	51404.4403	0.0037	I	—	0.1008	MZ
V502 Cyg	51399.5386	0.0022	I	—	0.0981	MZ
V681 Cyg	51399.5050	0.0028	I	—	0.0558	MZ
V693 Cyg	51379.4837	0.0059	I	—	-0.0139	MZ; normal. min.
V704 Cyg	51399.4937	0.0043	I	—	0.0309	MZ
V706 Cyg	51404.4559	0.0025	I	—	-0.0289	MZ
V711 Cyg	51465.4125	0.0019	I	—	-0.2470	MZ; normal. min.
V842 Cyg	51284.5151	0.0028	I	—	0.0240	JŠ
V865 Cyg	51435.3704	0.0019	II	—	0.0372	MZ; normal. min.
	51404.5050	0.0030	I	—	0.0398	MZ
	51433.3625	0.0030	I	—	0.0385	JŠ
	51449.4328	0.0033	I	—	0.0355	JŠ
V880 Cyg	51394.5641	0.0010	I	—	-0.0027	MZ
V906 Cyg	51399.3648	0.0071	I	—	0.0503	MZ; normal. min.
V907 Cyg	51435.3534	0.0032	I	—	0.0048	MZ
V931 Cyg	51378.4536	0.0018	I	—	-0.0022	MZ
V961 Cyg	51379.3653	0.0020	I	—	-0.0665	JŠ
V963 Cyg	51277.5487	0.0024	I	—	0.0005	JŠ
V970 Cyg	51404.4241	0.0037	I	—	-0.0055	MZ
	51465.3735	0.0024	I	—	-0.0072	MZ
V1004 Cyg	51379.3813	0.0031	I	—	-0.0774	JŠ,MZ; normal. min.
V1010 Cyg	51399.4802	0.0023	I	—	-0.0130	MZ
V1047 Cyg	51435.4094	0.0025	I	—	0.0311	MZ
V1048 Cyg	51375.4184	0.0035	I	—	0.0190	JŠ
V1130 Cyg	51392.4815	0.0013	I	—	-0.0297	JŠ
V1321 Cyg	51302.4987	0.0027	I	—	0.0579	JŠ
V1414 Cyg	51375.4989	0.0010	I	—	0.0404	JŠ
	51449.3226	0.0030	I	—	0.0358	JŠ
V1580 Cyg	51435.4085	0.0057	I	—	-0.0772	MZ
V1787 Cyg	51363.4315	0.0030	I	—	-0.0101	JŠ
V1908 Cyg	51375.4322	0.0036	I	—	-0.1829	JŠ
	51449.3558	0.0023	I	—	-0.1855	JŠ
V2239 Cyg	51435.3488	0.0013	I	—	0.0059	MZ
	51427.4094	0.0013	I	—	0.0031	JŠ
	51449.3886	0.0045	I	—	0.0039	JŠ
V2240 Cyg	51435.4750	0.0019	II	—	-0.0006	MZ
	51375.4523	0.0016	I	—	-0.0005	JŠ
	51392.4321	0.0020	I	—	0.0032	JŠ
	51427.3936	0.0016	II	—	0.0019	JŠ
	51433.4575	0.0025	II	—	0.0029	JŠ
	51449.4213	0.0029	I	—	0.0010	JŠ
BI Del	51363.4456	0.0042	I	—	-0.1414	JŠ
BO Del	51435.3854	0.0034	I	—	-0.0981	MZ
Z Dra	51272.4081	0.0028	I	—	-0.1210	MZ
TW Dra	51195.5401	0.0047	I	—	0.0249	MZ
XY Dra	51270.5752	0.0034	I	—	-0.0029	JŠ
	51379.3916	0.0022	I	—	-0.0026	JŠ
TZ Gem	51193.5236	0.0033	I	—	0.0310	MZ; normal. min.
AV Gem	51195.5077	0.0017	I	—	-0.0286	MZ
EG Gem	51195.4970	0.0016	I	—	0.2298	MZ
GM Gem	51193.4292	0.0065	I	—	-0.0132	MZ
HR Gem	51195.4837	0.0022	I	—	0.0173	MZ
	51241.4481	0.0017	I	—	0.0163	JŠ

Times of minima:						
Star name	Time of min. HJD 2400000+	Error	Type	Filter	$O - C$ [day]	Rem.
KQ Gem	51237.3462	0.0021	I	—	-0.0603	MZ
	51277.3339	0.0018	I	—	-0.0558	JŠ
	51484.5917	0.0014	I	—	-0.0582	JŠ
KV Gem	51193.3688	0.0016	II	—	-0.0072	MZ
	51193.5493	0.0029	I	—	-0.0060	MZ; normal. min.
	51195.5199	0.0017	II	—	-0.0073	MZ
	51237.4690	0.0019	I	—	-0.0049	MZ; normal. min.
	51481.4279	0.0013	I	—	-0.0182	JŠ
	51484.4897	0.0044	II	—	-0.0038	JŠ
	51518.5512	0.0060	II	—	-0.0016	MZ; normal. min.
AM Her	51277.5182	0.0017	I	—	0.0030	JŠ
DH Her	51288.4941	0.0019	I	—	-0.0034	MZ
ES Her	51404.4611	0.0041	I	—	-0.0148	MZ
	51401.3354	0.0082	I	—	-0.0124	MZ; normal. min.
V502 Her	51274.5718	0.0024	I	—	0.0054	JŠ
	51270.5095	0.0038	I	—	0.0052	JŠ
	51288.6060	0.0014	I	—	0.0071	MZ; normal. min.
V643 Her	51404.4730	0.0056	I	—	-0.2662	MZ; normal. min.
V719 Her	51274.5120	0.0042	II	—	-0.0128	JŠ
	51270.5027	0.0028	II	—	0.0084	JŠ
DE Hya	51543.5111	0.0090	I	—	0.0414	MZ
CG Lac	51535.2584	0.0048	I	—	-0.1286	MZ
EX Lac	51363.4276	0.0035	I	—	0.1970	JŠ
GH Lac	51465.4782	0.0082	I	—	-0.1071	MZ
	51374.4120	0.0121	I	—	-0.0910	MZ; normal. min.
	51535.2520	0.0021	I	—	-0.1098	MZ
HW Lac	51435.3783	0.0009	I	—	-0.0387	MZ
HX Lac	51435.4143	0.0022	I	—	-0.0749	MZ
IP Lac	51274.5529	0.0034	II	—	0.0633	JŠ
	51433.4529	0.0025	I	—	0.0633	JŠ
KO Lac	51535.3059	0.0137	I	—	0.1225	MZ; normal. min.
LU Lac	51435.4035	0.0023	I	—	0.0324	MZ; normal. min.
	51435.5538	0.0019	II	—	0.0333	MZ; normal. min.
NR Lac	51435.3780	0.0029	I	—	0.0521	MZ
	51401.5132	0.0028	I	—	0.0563	MZ
	51467.4369	0.0036	I	—	0.0564	MZ
NS Lac	51535.3083	0.0079	I	—	-0.1876	MZ
V344 Lac	51142.4126	0.0027	I	—	-0.0433	MZ; normal. min.
	51467.5729	0.0026	I	V	-0.0397	MZ; normal. min.
	51467.3782	0.0017	II	V	-0.0383	MZ
Y Leo	51302.4123	0.0011	I	—	0.0124	JŠ
UU Leo	51241.3776	0.0024	I	—	0.1030	JŠ
VZ Leo	51241.4290	0.0025	I	—	-0.0454	JŠ
BL Leo	51288.3507	0.0022	II	—	-0.0119	MZ; normal. min.
	51272.5578	0.0027	II	—	-0.0167	MZ
	51272.4173	0.0023	I	—	-0.0162	MZ; normal. min.
BW Leo	51288.4661	0.0021	II	—	-0.0421	MZ
CE Leo	51270.4522	0.0020	I	—	-0.0057	JŠ
AH Lyn*	51237.4575	0.0048	I	—	-0.0094	MZ
	51241.5290	0.0040	I	—	-0.0035	JŠ
AH Lyr	51277.4896	0.0026	I	—	-0.1098	JŠ
DU Lyr	51331.5120	0.0020	I	—	0.1510	JŠ
DZ Lyr	51404.4542	0.0038	I	—	-0.0021	MZ
FH Lyr	51377.3899	0.0026	I	—	0.0145	JŠ
GZ Lyr	51375.4921	0.0050	I	—	0.0016	JŠ

Times of minima:						
Star name	Time of min. HJD 2400000+	Error	Type	Filter	$O - C$ [day]	Rem.
IP Lyr	51379.5022	0.0025	I	—	-0.0018	JŠ
PY Lyr	51274.5194	0.0030	I	—	-0.0564	JŠ
	51331.4199	0.0015	II	—	-0.0553	JŠ
V361 Lyr	51288.3772	0.0041	I	—	-0.0394	MZ; normal. min.
	51404.4854	0.0037	I	—	-0.0372	MZ
	51435.2925	0.0323	II	—	-0.0369	MZ; normal. min.
	51435.4469	0.0025	I	—	-0.0373	MZ
V401 Lyr	51399.5437	0.0061	I	—	0.3138	MZ; normal. min.
V404 Lyr	51449.3947	0.0040	I	—	-0.0707	JŠ
TV Mon	51481.5142	0.0030	I	—	0.0071	JŠ
VX Mon	51237.4747	0.0055	I	—	-0.6930	MZ; normal. min.
AY Mon	51484.5586	0.0033	I	—	0.0199	JŠ
V532 Mon	51535.5646	0.0092	I	—	0.0662	MZ; normal. min.
EG Ori	51195.5685	0.0072	I	—	-0.0750	MZ
	51543.3551	0.0090	I	—	-0.0750	MZ; normal. min.
FH Ori	51193.4578	0.0024	I	—	-0.2685	MZ
GU Ori	51241.3810	0.0020	I	—	-0.0148	JŠ
	51481.4266	0.0009	I	—	-0.0166	JŠ
	51543.5568	0.0023	I	—	-0.0162	MZ; normal. min.
QV Ori	51543.4714	0.0041	I	—	0.0340	MZ; normal. min.
V645 Ori	51484.4323	0.0019	I	—	0.0344	JŠ
V648 Ori	51484.5131	0.0026	I	—	0.4495	JŠ
BY Peg	51377.3751	0.0014	I	—	-0.0495	JŠ
CC Peg	51465.5215	0.0082	I	—	0.0794	MZ; normal. min.
CE Peg	51465.3019	0.0030	I	—	-0.2291	MZ; normal. min.
	51535.2888	0.0063	I	—	-0.2224	MZ
EY Peg	51484.3518	0.0042	I	—	-0.2716	JŠ
WY Per	51535.3943	0.0048	I	—	-0.0353	MZ; normal. min.
DK Per	51433.5082	0.0025	I	—	0.0156	JŠ
II Per	51535.4383	0.0112	II	—	-0.0377	MZ
QU Per	51484.5821	0.0040	I	—	-0.0043	JŠ
V366 Per	51433.4168	0.0025	I	—	0.0708	JŠ
DK Sge	51377.4571	0.0017	I	—	0.1178	JŠ
EI Sge	51378.5884	0.0019	II	—	-0.0572	MZ; normal. min.
	51378.3961	0.0014	I	—	-0.0554	MZ; normal. min.
	51394.5121	0.0075	II	—	-0.0517	MZ
FL Sge	51394.4155	0.0090	I	—	0.0701	MZ
BI Ser	51274.4858	0.0021	I	—	0.1724	JŠ
CX Ser	51270.4526	0.0030	II	—	-0.0714	JŠ
AQ Tau	51241.2997	0.0015	I	—	-0.0657	JŠ
	51484.4754	0.0035	I	—	-0.0708	JŠ
EN Tau	51481.5843	0.0024	I	—	-0.0040	JŠ
ES Tau	51518.5578	0.0074	I	—	0.0091	MZ; normal. min.
V407 Tau	51481.5101	0.0005	I	—	0.3301	JŠ
UX UMa	51195.6834	0.0017	I	—	0.0035	MZ; normal. min.
VV UMa	51241.4599	0.0020	I	—	-0.0543	JŠ
AW Vir	51288.4012	0.0032	I	—	0.0102	MZ
AX Vir	51288.4350	0.0037	I	—	0.0040	MZ
DY Vir	51237.5370	0.0110	I	—	-0.1071	MZ; normal. min.
AW Vul	51331.4316	0.0025	I	—	0.0001	JŠ
AX Vul	51302.4795	0.0018	I	—	-0.0214	JŠ
BG Vul	51394.4404	0.0028	I	—	0.0108	MZ
	51404.5246	0.0025	I	—	0.0137	MZ

Times of minima:						
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BI Vul	51394.4209	0.0018	I	—	0.0823	MZ
	51378.4289	0.0016	I	—	-0.0451	MZ
	51378.5566	0.0054	I	—	0.0826	MZ; normal. min.
	51435.3414	0.0027	I	—	-0.0435	MZ; normal. min.
BK Vul	51404.6176	0.0031	I	—	0.0898	MZ; normal. min.
BM Vul	51374.5363	0.0174	I	—	0.0872	MZ; normal. min.
BT Vul	51270.5658	0.0016	I	—	-0.0002	JŠ
FF Vul	51331.4968	0.0016	II	—	0.0065	JŠ
	51392.4562	0.0046	II	—	0.0028	JŠ
	51433.3953	0.0035	II	—	0.0032	JŠ
FM Vul	51377.4279	0.0028	I	—	0.0191	JŠ
FR Vul	51374.4444	0.0029	I	V	-0.0036	MZ
GI Vul	51363.4919	0.0014	I	—	-0.0145	JŠ
GV Vul	51435.4750	0.0018	I	—	0.0612	MZ
NO Vul	51375.3597	0.0020	I	—	-0.0552	JŠ

Explanation of the remarks in the table:

DH = Hanžl, D., JŠ = Šafář, J., MZ = Zejda, M.; normal min. = times of minima were obtained from superposition of two or more parts of light curve from different nights.

Remarks:

The obtained timings of minima are used especially to improve the light elements of stars given in catalogue BRKA of observing programme of eclipsing binaries of BRNO-Variable Star Section. The catalogue contains more than 1500 eclipsing binaries and it is updated at least one times per year. It is available on <http://var.astro.cz/brno> .

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