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UPDATED ELEMENTS FOR SOUTHERN ECLIPSING BINARIES

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A set of 442 eclipsing binaries was selected from the GCVS catalog (Kholopov et al., 2003) that had declination < 0 , minimum magnitude brighter than 13.0, and no published times of minima later than JD 2440000 available through the NASA ADS service. An automated web-based data gathering application was developed to retrieve and display data from the ASAS-3 database (Pojmanski, 2002). A search radius of 45 arcsec was used when selecting candidate stars.

Using the ASAS-3 data, a light curve for each star was plotted using the period listed in the GCVS. Only data of quality “A” or “B” were used in this analysis. Of the 442 stars, 281 were found to match the published periods quite well. For these stars updated times of minima were determined by picking the data point closest to the midpoint of the eclipse in the light curve plot. These updated times of minima are available in electronic form on the Konkoly Observatory IBVS site as `5542-t3.txt`.

The periods for an additional 46 stars were close to the published period, but were obviously not quite in phase. The data for these stars were analyzed using the interactive light curve plotting tool in AVE (Barberá, 1999). Many of these discrepancies probably represent real changes in periods over the intervening decades. The revised periods and times of minima determined as above are listed in Table 1, and are also available electronically at IBVS web site as `5542-t1.txt`.

Another 85 stars in the set had a period radically different from that listed in the GCVS. The period-searching routines in AVE were used on these stars to determine the correct period. The new periods and times of minima for these stars are listed in Table 2, and again also available on the IBVS web site as `5542-t2.txt`.

The remaining 30 stars were either not found in the ASAS database, despite an extended search radius, or were variables that had been misclassified as eclipsing binaries. A second paper is in preparation for the data on these stars.

Table 1. Updated elements for 46 eclipsing binary stars.

Star Name	GCVS		Updated		ASAS-3 (V mag)	
	Range	Period(d)	Period(d)	Epoch	Pri Range	Sec Range
WZ Ant	11.5-11.8	0.445854	0.44592	3044.76	11.7-12.1	11.7-12.0
HL Aps	12.3-12.9	0.956	0.956256	2512.512	12.5-13.0	12.5-12.9
II Aps	11.2-11.7	0.8424	0.84227	1930.843	11.0-11.5	11.0-11.5
LR Ara	10.0-10.6	1.519304	1.51955	2935.535	10.5-11.0	10.5-11.0
V0489 Ara	11.7-12.9	0.64	0.6401	3080.878	12.2-12.8	12.2-12.3
V0491 Ara	11.7-12.5	0.9404	0.9401	2437.635	12.3-12.9	12.3-12.5
DK Car	11.6-12.7	11.335	11.352	2463.8	11.9-12.8	11.9-12.0
PX Car	9.65-10.45	0.795171	0.7951	2910.82	9.6-10.4	9.6-10.0
LW Cen*	8.9-9.65	1.0025674	1.00265	2651.793	9.20-9.25	9.20-9.23
V0380 Cen	9.7-10.2	1.0872172	1.0872	3043.821	9.4-10.0	9.4-9.8
V0677 Cen	11.5-11.7	0.325067	0.325032	1921.83	10.8-11.2	10.8-11.2
VW CMa	9.0-9.2	0.720831	0.720815	2745.585	9.4-9.8	9.4-9.7
YY CMa	12.3-12.7	5.60945	5.612	2128.927	10.9-11.3	< 0.1
RZ Col	11.0-11.58	0.56522725	0.56519	2116.908	11.0-11.5	11.0-11.2
UU CrA	10.9-11.6	2.237996	2.2376	2939.57	10.7-11.4	< 0.1
SZ Cru	10.9-11.6	1.974	1.9743	3075.715	11.4-12.4	< 0.1
TU Cru	11.0-11.9	3.1	3.1003	2658.79	11.5-12.6	11.5-12.0
AY Cru	11.1-12.2	1.598383	1.59845	3087.764	11.3-12.5	11.3-11.4
DS Eri	10.0-11.0	0.827701	0.82762	2987.584	10.8-11.5	10.8-11.1
RU Gru	11.0-11.4	1.89664	1.8932	2906.63	11.0-11.8	11.0-11.1
RY Gru	11.7-12.3	2.01063	2.0129	2206.566	11.7-12.5	11.7-11.8
AK Gru	11.0-11.5	0.49389	0.49368	2939.689	11.5-12.4	11.5-11.7
TV Ind	11.7-12.2	0.57686	0.57666	2838.872	10.7-11.3	10.7-11.0
RR Men	11.8-12.6	2.6011	2.59959	2196.67	11.4-12.8	not discernable
TV Mic	11.7-12.6	2.0762	2.0784	2812.733	12.4-13.4	12.4-13.3
UZ Mic	11.9-12.4	0.440964	0.44114	2434.775	13.1-13.6	13.1-13.6
VY Mic	9.4-9.7	4.4358	4.4364	2216.56	9.5-10.5	9.5-9.6
TT Mus	11.9-12.7	3.53479	3.5343	2784.61	12.9-14.0	not discernable
SZ Nor	12.3-12.6	1.47456	1.47465	2838.581	13.0-13.7	13.0-13.6
BI Pav	10.7-11.3	2.52694	2.5272	2562.61	10.5-11.3	10.5-10.6
BT Pav	11.0-12.8	2.544	2.54416	2136.631	10.7-12.0	10.7-10.8
HQ Pav	12.5-12.8	0.9262	0.92568	2136.608	12.1-12.7	12.1-12.3
HY Pav	11.4-12.3	0.3516	0.351657	2558.556	11.3-12.1	11.3-11.9
CF Pup	9.4-12.6	7.64556	7.6498	2795.46	10.2-12.2	10.2-10.3
CI Pup	11.3-12.6	1.65792	1.6577	2720.650	11.4-12.8	< 0.1
GY Pup	11.9-12.3	0.412209	0.41218	3048.658	11.2-11.9	11.2-11.9
GZ Pup	11.7-12.2	0.320274	0.320266	3080.668	11.1-11.8	11.1-11.7
HI Pup*	10.7-11.0	0.432651	0.432617	1968.571	10.4-10.8	10.4-10.8
SV Pyx	10.0-11.0	1.4424	1.4464	1952.664	10.7-11.4	< 0.1
TV Pyx	12.1-12.5	0.646765	0.64667	2747.66	11.1-11.7	11.1-11.2
V0756 Sco*	10.5-11.1	10.78	10.771	2703.82	10.3-11.5	10.3-10.5
CG Vel	10.6-12.5	3.685	3.6845	2056.5	11.2-12.6	11.2-11.3
FW Vel	9.5-10.2	2.384082	2.3835	2026.559	10.5-11.3	10.5-11.1
YY Vel	10.6-11.1	4.1636	4.164	1933.74	11.0-11.8	11.0-11.1
ZZ Vel	9.93-10.39	2.87615	5.752	3051.68	9.9-10.3	9.9-10.3
W Vol	10.9-11.8	2.758361	2.75815	2229.8	10.6-11.8	10.6-10.7

*Notes on individual stars:

LW Cen = range appears to have markedly decreased

HI Pup = primary total

V0756 Sco = primary total?

Table 2. Corrected elements for 85 eclipsing binary stars.

Star Name	GCVS		Updated		ASAS-3 (V mag)	
	Range	Period(d)	Period(d)	Epoch	Pri Range	Sec Range
VW Ant	10.2-12.5	5.5462	1.08402	2741.621	11.2-12.5	11.2-11.6
XX Ant	8.7-9.2	8.107	0.88801	3052.812	8.6-9.2	8.6-9.2
XY Ant	9.5-10.2	1.837962	2.1803	2249.783	10.0-10.6	10.0-10.5
Y Ant	10.1-10.7	3.0519244	6.1039	1930.737	10.0-10.7	10.0-10.6
CD Aps	11.3-11.8	0.89366	3.3016	2526.614	11.5-12.1	11.5-11.8
FY Aps	10.9-11.7	5.49935	2.749675	2164.502	10.7-11.8	10.7-10.9
LO Aps	11.3-11.8	0.7988	1.3312	2756.759	11.2-11.8	11.2-11.7
V0843 Aql	9.8-10.2	1.497957	9.024	2433.72	9.8-10.2	9.8-10.0
MM Ara	11.0-12.0	1.27828	2.5566	2102.592	11.3-12.0	11.3-11.9
V0349 Ara	8.6-8.8	1.13837	2.6518	2193.489	8.6-9.1	8.6-8.9
V0610 Ara	8.8-9.2	1.48406	0.543166	2495.508	8.9-9.3	8.9-9.3
V0620 Ara	9.0-9.8	1.554965	3.10993	2405.747	10.0-11.5	> 0.1
AF Cap	10.1-10.8	6.03145	5.935	2034.91	10.8-12.2	10.8-10.9
DQ Car	11.1-11.5	0.86691	1.73368	2804.49	11.1-11.8	11.1-11.6
DV Car	10.0-10.3	0.8405	1.68147	1954.696	10.5-11.1	10.5-10.9
DX Car	10.6-10.8	10.466	21.01	3008.78	11.5-11.9	11.5-11.8
EN Car	10.58-10.9	1.53498	3.07	3072.841	10.3-10.7	10.3-10.6
FP Car	10.1-11.5	176.027	176.35	2706.7	9.7-10.5	> 0.1
GP Car	12.4-12.8	2.264192	2.424	3070.706	11.5-11.9	11.5-11.8
QR Car	10.0-10.5	1.197375	0.749005	2750.728	9.4-10.1	9.4-9.6
PV Cen	11.4-12.5	1.91733	3.8346	2868.5	11.5-12.2	11.5-12.0
V0498 Cen	10.3-11.3	6.30038	0.75751	2038.623	11.0-12.4	11.0-11.2
V0614 Cen	10.7-11.0	3.47361	6.947	3038.87	10.6-11.1	10.6-10.9
V0742 Cen	9.4-10.2	6.49	0.864454	2031.554	9.5-10.2	9.5-10.0
V0775 Cen	9.9-10.6	1.327286	0.663641	1961.767	9.7-10.3	9.7-9.9
V0805 Cen	9.9-10.3	2.211155	3.3167	2459.477	10.0-10.5	10.0-10.2
WZ Cet	10.8-11.4	6.645088	4.6122	1869.578	10.2-10.8	10.2-10.8
AQ Cir	11.0-11.7	0.57284	1.14568	3096.765	11.1-11.8	11.1-11.6
BD Cir	9.4-9.9	0.86956	6.791	1977.75	10.2-11.0	10.2-10.4
BG Cir	9.6-10.3	1.911485	24.8	2548.5	10.6-12.4	10.6-10.7
BN Cir*	9.2-9.6	6.7125	4.4098	2643.85	10.1-10.7	10.1-10.5
AR CMa	11.9-12.5	1.166069	2.33228	3075.678	10.9-11.6	10.9-11.5
FQ CMa	9.6-10.2	2.652	0.724734	3034.646	11.0-12.3	11.0-11.2
SZ CMa	10.2-11.1	2.8560849	5.712	2250.757	10.5-11.2	10.5-11.1
SV Col	11.4-12.2	3.6218	2.752	2134.87	11.8-12.4	11.8-12.3
V0412 CrA	10.7-11.3	4.837	9.666	2955.51	10.1-10.6	10.1-10.3
AA Cru	10.8-11.4	1.89382	3.7877	2831.6	11.2-11.7	11.2-11.5
BQ Eri	10.5-11.0	1.429712	0.82197	3051.601	10.7-11.0	10.7-10.8
CI Eri	9.5-10.5	3.38288	1.2382	2082.911	9.6-10.7	9.6-9.7
AR Gru	10.0-10.6	2.29672	10.681	2892.68	11.5-12.9	11.5-11.7
SZ Hor	10.4-10.8	0.4804562	0.6251	3081.526	11.0-11.8	11.0-11.2
DZ Hya	11.4-11.9	1.08777	2.1755	2649.817	10.9-11.6	10.9-11.4
FW Hya	12.2-12.5	0.509603	0.406135	1948.72	11.2-11.6	11.2-11.5
RU Ind	11.3-12.1	35.54	5.206	2183.55	11.2-12.6	11.2-11.3
FW Lib	9.8-10.2	1.495095	2.24275	2027.674	11.5-14.2	> 0.1
FR Lup	10.1-10.8	1.264033	5.177	1982.74	10.5-11.5	10.5-10.8
FZ Lup	9.4-9.8	2.26731	4.535	2717.746	10.0-10.6	10.0-10.5
BL Mus*	11.1-11.8	5.0126	9.897	2703.74	11.2-11.9	not discernable
UV Mus	10.2-11.4	2.003273	4.0066	2235.835	10.5-11.3	10.5-11.3
HX Nor	12.3-12.9	33.754	67.49	2548.51	11.4-12.2	11.4-12.1
LU Nor	11.9-12.4	0.47618	2.6551	3060.849	12.0-13.1	not discernable
NP Pav	10.7-11.7	1.266821	0.63341	2016.846	11.0-12.0	11.0-11.2
VW Phe	10.57-11.14	1.74216	6.884	2819.94	10.4-11.3	10.4-10.5
WX Phe	11.9-12.9	1.387	2.7776	1868.585	12.3-13.2	12.3-12.6

Table 2 cont'd. Corrected elements for 85 eclipsing binary stars.

Star Name	GCVS		Updated		ASAS-3 (V mag)	
	Range	Period(d)	Period(d)	Epoch	Pri Range	Sec Range
AW Pup	10.2-10.9	0.68108	1.3622	2545.834	9.7-10.2	9.7-10.15
BK Pup	10.4-10.7	1.50127	3.0025	2645.73	10.3-10.7	10.3-10.6
CU Pup	11.4-12.3	3.33738	6.676	3060.59	10.7-11.4	10.7-11.3
MW Pup	8.8-9.2	2.398735	1.7109	3005.709	9.3-9.8	9.3-9.7
SU Pyx	11.4-12.5	5.06953	2.5348	2763.592	11.2-12.7	> 0.1
TX Pyx	9.5-9.9	1.123745	0.562751	1939.652	9.9-10.4	9.9-10.2
TZ Pyx	10.7-11.1	0.6973125	2.31854	2226.773	10.7-11.4	10.7-11.3
FU Sco	12.0-12.8	11.2682	5.6349	2137.52	12.1-12.7	12.1-12.2
V0385 Sco	10.9-11.7	2.34515	4.69	2197.49	10.9-11.5	10.9-11.4
V0565 Sco	10.6-11.0	6.289269	12.579	2813.79	10.4-10.9	10.4-10.6
V0591 Sco	11.7-12.4	0.777684	1.55537	3079.824	11.9-12.7	11.9-12.7
V0606 Sco	11.9-12.2	1.342884	2.6857	2757.78	11.7-12.4	11.7-12.3
V0632 Sco	11.5-11.9	1.610168	3.2204	2834.734	11.1-11.7	11.1-11.6
V0714 Sco	12.2-12.8	0.6982113	1.3965	2564.53	ri 11.8-12.4	11.8-12.3
V0885 Sco	8.6-8.9	3.119975	9.298	2951.51	9.3-9.7	9.3-9.6
V0904 Sco	10.0-10.4	2.533993	1.267	2712.845	10.4-11.1	10.4-10.5
EQ Sct	11.7-12.6	1.3217788	3.8966	2388.83	11.3-11.8	11.3-11.5
V0356 Sct	12.0-12.4	1.061441	2.1229	2924.545	11.7-12.4	11.7-12.3
V0766 Sgr	11.0-12.9	147.105	294.2	2158.51	10.8-11.5	10.8-11.4
V2349 Sgr	8.76-9.4	5.02565	3.4085	2105.64	8.5-9.0	8.5-8.6
V2617 Sgr	9.56-10.1	0.9972646	1.26753	2086.772	9.5-10.2	9.5-9.6
NS Tel*	9.2-9.6	3.9445	1.3397	2764.796	9.6-10.0	9.6-9.8
EM TrA	10.1-10.5	1.03026	2.13159	1964.811	10.0-10.8	10.0-10.7
SS TrA*	10.5-11.3	1.72043	8.601	2040.66	10.8-11.5	10.8-11.3
AQ Vel	11.5-12.0	1.042499	2.085	3079.651	11.9-12.7	11.9-12.6
DU Vel	10.8-11.5	1.552563	3.1051	2949.85	11.6-12.4	11.6-12.4
DZ Vel	10.5-11.0	2.81044	5.621	3124.52	11.4-11.9	11.4-11.9
FH Vel	11.6-12.0	1.457473	3.915	3110.62	12.2-12.6	12.2-12.5
FT Vel	10.1-11.2	1.05975	1.1306	3040.726	11.2-12.5	11.2-11.4
FV Vel	10.2-10.7	3.04228	1.95848	1984.60	10.1-10.5	10.1-10.4
FQ Vir	10.1-10.9	3.018375	0.749602	2069.558	10.0-10.9	10.0-10.1

*Notes on individual stars:

BN Cir = very eccentric: secondary phase = 0.78

BL Mus = period actually 19.79d?

NS Tel = O'Connell effect

SS TrA = very eccentric: secondary phase = 0.2

Acknowledgements: This research has made use of NASA's Astrophysics Data System Bibliographic Services, and the All Sky Automated Survey database (<http://www.astrouw.edu.pl/~gp/asas/asas.html>).

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