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**CCD MINIMA FOR SELECTED ECLIPSING BINARIES IN 2013**

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**Observatory and Telescope:** Sylvester Robotic Observatory (SyRO): 33 cm  $f/4.5$  Newtonian on a Paramount ME.

**Detector (CCD):** SyRO: SBIG ST-10XME, 6.8'' pixels, 34.4'×23.2' FOV, cooled to  $-10 < T < -30^{\circ}\text{C}$ .

**Method of data reduction:** Bias and dark subtraction, flat-fielding using light-box flats; aperture photometry – all using MIRA, by Mirametrics. Check stars were used throughout.

**Method of minimum determination:** Digital tracing paper method, bisection of chords, curve fitting, and (occasionally) Kwee and van Woerden (1956).

Table 1. Table of the times of minima.

Star name	Time of Minimum	Error	Type	Filter	O–C
V0523 And	56527.8946	0.0002	I	c	–0.0004
V0531 And	56593.7849	0.0003	I	c	0.0000
V0546 And	56594.695	0.0002	I	c	–0.0002
G2837-1343 And	56633.643	0.0003	II	c	–0.0002
G0471-0860 Aql	56422.9164	0.0001	II	c	0.0000
BO Ari	56514.9358	0.0002	I	VRI	0.0000
BO Ari	56526.8681	0.0003	I	VRI	0.0001
BO Ari	56535.9364	0.0001	I	VRI	–0.0001
BO Ari	56560.9145	0.0002	II	VRI	–0.0001
BO Ari	56579.6885	0.0001	II	VRI	0.0005
BO Ari	56579.8475	0.0001	I	VRI	0.0004
G1210-0442 Ari	56593.7849	0.0002	II	c	0.0000
V0364 Aur	56650.716	0.0002	I	c	–0.0001
V0410 Aur	56632.7425	0.0005	II	R	0.0028
V0569 Aur	56299.6838	0.0002	II	c	0.0000
XY Boo	56397.7891	0.0001	I	R	–0.0024

Star name	Time of Minimum	Error	Type	Filter	O-C
FI Boo	56303.022	0.0002	II	R	0.0026
GN Boo	56398.7575	0.0003	II	VRI	0.0012
GO Boo	56375.9018	0.0008	I	c	-0.0002
GR Boo	56356.912	0.0001	II	R	0.0006
PU Boo	56391.8136	0.0003	I	R	0.0021
V0339 Boo	56397.8729	0.0003	I	R	0.0000
AO Cam	56600.7874	0.0001	I	R	0.0011
FN Cam	56304.7418	0.0002	II	R	-0.0001
QU Cam	56629.622	0.0002	I	c	0.0002
V0337 Cam	56303.6375	0.0002	II	R	-0.0013
V0383 Cam	56629.744	0.0002	II	c	0.0008
V0474 Cam	56594.8821	0.0002	II	R	-0.0019
V0516 Cam	56294.843	0.002	I	c	0.0000
TW Cas	56550.867	0.005	II	VRI	0.0012
BS Cas	56525.9343	0.0001	II	c	0.0008
V1175 Cas	56594.7838	0.0002	I	V	-0.0025
V0699 Cep	56552.7083	0.0005	I	c	0.0001
V0736 Cep	56435.912	0.001	I	R	0.0021
V0737 Cep	56421.945	0.0002	II	c	-0.0005
G4475-0618 Cep	56429.9278	0.0002	I	c	0.0000
V0870 Cep	56488.846	0.0003	I	R	0.0007
AK CMi	56356.6684	0.0002	I	R	0.0002
DS Cmi	56349.78	0.001	II	c	0.000
GW Cnc	56359.7073	0.0004	I	c	0.0012
IL Cnc	56355.6678	0.0002	II	c	0.0012
IN Cnc	56374.6944	0.0005	II	c	0.0008
LR Com	56363.806	0.001	I	c	0.0005
TW CrB	56379.9098	0.0003	II	VRI	0.0013
AS CrB	56390.7656	0.0003	I	c	0.0038
AV CrB	56340.9119	0.0001	II	c	-0.0009
CX CVn	56370.8499	0.0002	I	R	-0.0002
DL CVn	56293.9353	0.0005	I	c	0.0008
G2530-1069 CVn	56360.8018	0.0002	I	V	0.0000
ZZ Cyg	56449.9125	0.0001	I	c	-0.0006
V0859 Cyg	56420.9437	0.0002	I	c	0.0007
V2278 Cyg	56417.9421	0.0003	II	c	0.0346
G2711-0645 Cyg	56493.8208	0.0004	II	c	0.0000
G2750-0054 Cyg	56506.913	0.001	I	R	-0.0001
G2750-0054 Cyg	56507.8561	0.001	I	c	-0.0008
G2750-0054 Cyg	56524.8448	0.0003	I	c	0.0000
G2750-0054 Cyg	56530.742	0.001	II	c	-0.0014
G2750-1476 Cyg	56507.833	0.002	I	c	0.003
G2750-1476 Cyg	56517.8543	0.0004	II	c	0.0042
G2750-1476 Cyg	56524.742	0.002	II	c	0.0125
G2750-1476 Cyg	56524.8791	0.0003	I	c	0.0000
G3581-1856 Cyg	56397.9885	0.0002	II	c	-0.0004
Z Dra	56601.0307	0.0006	II	VRI	0.0042
Z Dra	56632.9278	0.0001	I	R	0.0012
FX Dra	56421.7308	0.0002	I	VRI	0.0009

Star name	Time of Minimum	Error	Type	Filter	O-C
GQ Dra	56415.786	0.001	II	R	0.0006
G4424-1787 Dra	56356.0209	0.0001	I	c	0.0000
G4453-0432 Dra	56357.0639	0.0004	II	c	0.0000
G4436-1300 Dra	56358.8956	0.0002	I	R	0.0000
G4421-0400 Dra	56360.9707	0.0002	II	c	0.0000
G4552-1643 Dra	56362.7542	0.0002	I	c	0.0000
G4421-1217 Dra	56381.9344	0.0002	I	c	0.0005
G3897-1017 Dra	56417.7955	0.0003	I	c	0.0000
G4449-1278 Dra	56423.828	0.001	I	c	0.000
G4453-0432 Dra	56423.9161	0.0008	I	c	0.0000
G4448-1301 Dra	56438.8193	0.0002	II	c	0.0000
V0414 Gem	56293.7535	0.002	I	R	0.0027
V0829 Her	56374.8648	0.0002	II	R	0.0021
V0878 Her	56398.975	0.002	II	VRI	-0.0006
V0878 Her	56418.8298	0.0002	I	VRI	-0.0011
V0878 Her	56422.8038	0.0006	II	VRI	0.0019
V1092 Her	56378.9251	0.0002	I	c	-0.0006
V1101 Her	56413.9105	0.0001	I	c	-0.0006
V1098 Her	56415.9034	0.0001	II	c	0.0002
G0380-0247 Her	56435.8154	0.0006	II	R	-0.0057
AP Leo	56356.8352	0.0001	II	R	0.0016
G1965-0735 Leo	56302.8903	0.0002	I	V	-0.001
AG LMi	56369.7272	0.0002	I	c	0.0002
BG Lyn	56633.8954	0.0002	I	R	0.0008
V0448 Mon	56299.7712	0.0003	II	c	-0.0014
G0159-1018 Mon	56629.86115	0.0002	I	R	0.0000
G0410-2795 Oph	56358.9894	0.0001	I	c	0.0000
AT Peg	56509.8669	0.0007	I	BVRI	-0.0051
G2750-0854 Peg	56506.8331	0.0002	II	R	-0.0009
V0881 Per	56297.5893	0.0002	I	R	-0.002
CP Psc	56582.7085	0.0002	I	R	0.0000
EY Psc	56569.7125	0.0002	I	R	0.0000
HL Psc	56597.7048	0.0005	II	R	-0.0063
HN Psc	56632.62049	0.0002	II	R	0.0000
AI Sex	56375.7234	0.0003	I	R	0.0025
EQ Tau	56613.7242	0.0004	I	R	-0.0016
V1238 Tau	56305.8152	0.0005	I	R	0.0000
V1370 Tau	56593.9037	0.0002	I	c	-0.0002
CL Tri	56600.6447	0.0003	I	c	0.0002
XY UMa	56357.6878	0.0004	II	V	-0.0002
BS UMa	56359.8145	0.0002	I	c	0.001
FT UMa	56303.8347	0.0002	II	R	0.0000
HH UMa	56304.8716	0.0005	II	R	0.0006
HN UMa	56634.0231	0.0003	I	R	0.0084
G3011-1150 UMa	56355.8504	0.0002	I	c	0.0003
TV UMi	56362.891	0.0002	I	V	-0.0022
V0355 Vir	56357.907	0.02	I	c	0.005
DZ Vul	56554.6807	0.0003	I	c	-0.0004
V0467 Vul	56492.7984	0.0003	II	R	-0.0005

**Remarks:** Star name G denotes GSC.

**Note:** O–C values were computed using elements computed from the O–C database mentioned in the references (Nelson, 2013).

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References:

- Danko, A., Clear Sky Charts, <http://cleardarksky.com/>  
Kwee, K. K., & van Woerden, H., 1956, *BAN*, **12**, 327  
Nelson, R. H., 2013, Bob Nelson’s O–C Files, <http://www.aavso.org/bob-nelsons-o-c-files>  
Satellite Images for North America, [http://weather.gc.ca/satellite/index\\_e.html](http://weather.gc.ca/satellite/index_e.html)