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CCD MINIMA FOR SELECTED ECLIPSING BINARIES IN 2004

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Observatory and telescope:

Sylvester Robotic Observatory (SRO): 33 cm f/4.5 Newtonian on Paramount GT-1100s mount
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Detector:	SBIG ST-7e, Kodak KAF-0401E, 9 $\mu\text{m} \times 9 \mu\text{m}$, FOV 15''8 \times 10''5 SBIG ST-9, KAF-0261E, 20 $\mu\text{m} \times 20 \mu\text{m}$, FOV 11''9 \times 11''9 ¹ SBIG ST-7XE, Kodak KAF-0402ME, 9 $\mu\text{m} \times 9 \mu\text{m}$, FOV 15''8 \times 10''5 All cameras were cooled to $-10^\circ > T > -30^\circ \text{ C}$
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Method of data reduction:

Aperture photometry using MIRA Pro 7, by Axiom Research. Digital tracing paper method, bisection of chords, curve fitting, and (occasionally) Kwee and van Woerden (1956).

Times of minima:					
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Star name	Time of min. HJD 2400000+	Error	Type	Filter	Rem.
BF Aur	53010.7487	0.0002	I	c	ST-7e
V776 Cas	53351.7116	0.0001	I	V	ST-7XE
SU Cep	53144.8552	0.0001	I	V	ST-9
EG Cep	53187.8343	0.0001	I	R	ST-7XE
XZ CMi	53010.8555	0.0003	II	c	ST-7e
RW Com	53007.94105	0.00005	II	c	ST-7e
RW Com	53008.06044	0.00005	I	c	ST-7e
EK Com	53093.7813	0.0001	II	c	ST-7e
BI CVn	53095.7933	0.0002	II	c	ST-7e; Sine $O - C$ relation ⁴
V0628 Cyg	53172.8647	0.0003	I	c	ST-7XE; Abrupt period change?? ⁴
V0700 Cyg	53261.7653	0.0002	I	c	ST-7XE; Piecewise linear $O - C$ plot ⁴
V0859 Cyg	53141.8049	0.0005	II	c	ST-9
V1130 Cyg	53139.7936	0.0001	I	c	ST-9
EX Del	53160.8803	0.0001	I	c	ST-7XE; New period, 0.3309880 d ⁴
AR Dra	53007.83558	0.00005	I	c	ST-7e
CV Dra	53093.8837	0.0003	II	c	ST-7e
YY Eri	53024.6709	0.0001	I	V	ST-7e

¹With x2 tele-extender lens

Times of minima:					
Star name	Time of min. HJD 2400000+	Error	Type	Filter	Rem.
SX Gem	53048.6821	0.0001	I	c	ST-7e
AV Gem	53015.7747	0.0002	I	c	ST-7e
QW Gem	53040.6172	0.0002	I	c	ST-7e
SZ Her	53145.8592	0.0001	I	V	ST-9
AK Her	53136.7703	0.0005	I	c	ST-9
V0502 Her	53082.0075	0.0002	II	c	ST-7e
V0502 Her	53121.8893	0.0002	II	c	ST-7e
V0742 Her	53090.895	0.001	II	c	ST-7e
V0842 Her	53081.8388	0.0001	I	V	ST-7e
V0842 Her	53111.80053	0.00005	I	c	ST-7e
V0878 Her	53088.9686	0.0002	I	V	ST-7e
V0921 Her	53087.9381	0.0002	I	c	ST-7e; Period uncertain ²
V0342 Lac	53166.8349	0.0003	II	c	ST-7XE
Y Leo	53089.6776	0.0001	I	c	ST-7e; Cyclic $O - C$ relation ⁴
VZ Leo	53087.7141	0.0001	I	c	ST-7e
AP Leo	53092.7672	0.0002	I	V	ST-7e
AP Leo	53111.7045	0.0002	I	c	ST-7e
BL Leo	53112.7145	0.0003	II	c	ST-7e
CE Leo	53051.882	0.0001	I	c	ST-7e
RT LMi	53006.9073	0.0001	I	c	ST-7e
RZ Lyn	53047.6917	0.0003	I	c	ST-7e
DF Lyr	53173.8661	0.0001	II	c	ST-7XE
MZ Lyr	53138.868	0.001	I	c	ST-9
V0404 Lyr	53159.79647	0.00005	I	c	ST-7XE
IX Mon	53053.709	0.001	I	c	ST-7e
V2357 Oph	53137.7985	0.0005	II	c	ST-9
V0647 Ori	53020.767	0.002	II	c	ST-7e
IM Per	53352.6518	0.0002	II	c	ST-7XE
AS Ser	53143.7715	0.0003	II	c	ST-9; Poor $O - C$ relation ⁴
CX Ser	53143.8626	0.0004	I	c	ST-9; Period uncertain ²
V1123 Tau	53020.5985	0.0002	I	c	ST-7e
XZ UMa	53048.7928	0.0001	I	c	ST-7e; Possible eccentric orbit ⁴
TW UMa	53089.756	0.001	I	c	ST-7e
AA UMa	53040.7538	0.0003	I	c	ST-7e
II UMa	53081.713	0.002	I	V	ST-7e
GI Vul	53132.9381	0.0002	I	c	ST-7e
KN Vul	53160.7803	0.0003	I	c	ST-7XE
NO Vul	53123.8924	0.0001	I	c	ST-7e
GSC 3449-0680	53058.68	0.001	II	R	ST-7e; Newly discovered variable ³⁴
GSC 3449-0680	53058.96	0.001	I	R	ST-7e
GSC 3449-0680	53066.809	0.001	I	R	ST-7e
GSC 3449-0680	53074.938	0.001	II	R	ST-7e
GSC 3449-0680	53077.744	0.001	II	R	ST-7e

Remarks:

Attention is directed towards the website maintained by the author and others (see Eclipsing Binary $O - C$ Files below) that provides Excel files with times of minima and $O - C$ plots for some 1400+ eclipsing systems. It is being continually updated and expanded. Another very useful utility (see below) is the Eclipsing Binary Ephemeris Generator, maintained by Shawn Dvorak, which gives eclipse predictions visible at a specified location for a give night.

²Sparse data³See IBVS 5600⁴See "Eclipsing Binary $O - C$ Files" in the references

Acknowledgements:

Thanks are due to Environment Canada for the website satellite views (see reference below) that were essential in predicting clear times for observing runs in this cloudy locale. Thanks are also due to Attila Danko for his “Clear Sky Clocks”, (see below). This research has made use of the SIMBAD database, operated at CDS, Strasbourg, France.

References:

Danko, A., Clear Sky Clocks, <http://cleardarksky.com/>

Dvorak, S., Eclipsing Binary Ephemeris Generator,

<http://www.rollinghillsobs.org:8000/perl/calcEBephem.pl>

Kwee, K.K., & van Woerden, H., 1956, *B.A.N.*, **12**, (464), 327-330

Nelson, R.H., Eclipsing Binary *O – C* Files,

http://www.aavso.org/observing/programs/eb/omc/nelson_omc.shtml

Satellite Images for North America, <http://gfx.weatheroffice.ec.gc.ca/>