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

Number 6018

Konkoly Observatory
Budapest
19 March 2012

HU ISSN 0374 – 0676

CCD MINIMA FOR SELECTED ECLIPSING BINARIES IN 2011

NELSON, ROBERT H.

1393 Garvin Street, Prince George, BC, Canada, V2M 3Z1
e-mail: b-o-b.nelson@shaw.ca [remove dashes]

Observatory and telescope:
Sylvester Robotic Observatory (SyRO): 33 cm f/4.5 Newtonian on a Paramount ME

Detector:	SyRO: SBIG ST-7XME, 1.″25 pixels, 15.′8 × 10.′5 FOV, $-10 < T < -30$°C SyRO: SBIG ST-10XME, 6.″8 pixels, 34.′4 × 23.′2 FOV, $-10 < T < -30$°C

Method of data reduction:
Aperture photometry using MIRA, by Mirametrics. 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:
Kwee & van Woerden (1956)

Remarks:
Digital tracing paper method, bisection of chords, curve fitting, and (occasionally) Kwee and van Woerden (1956)

Times of minima:						
Star name	Time of min. HJD 2400000+	Error	Type	Filter	$O-C$ [day]	Rem.
QX And	55842.742	0.002	I	R (2)	0.00176	
V0404 And	55848.7187	0.0003	I	C (2)	0.00308	
V0463 And	55847.6803	0.0002	II	C (2)	0.00000	
G0473-3466 Aql	55712.8756	0.0005	I	C (1)	0.00000	
G1045-1028 Aql	55700.92063	0.0001	!	C (1)	0.00000	
RX Ari	55850.799	0.001	I	C (2)	−0.00221	
BN Ari	55591.6207	0.0001	I	R (1)	−0.00057	
HL Aur	55836.903	0.0002	II	C (2)	−0.00249	
V0567 Aur	55592.9245	0.0003	II	C (1)	−0.00071	
G2374-0055 Aur	55904.6824	0.0005	II	C (2)	0.00044	
G2429-1010 Aur	55590.8436	0.0005	I	C (1)	0.00000	
G2933-1972 Aur	55849.8957	0.0001	I	C (2)	−0.00013	
SY Boo	55649.828	0.002	I	C (1)	−0.00268	(a)
TZ Boo	55927.0427	0.0002	I	R (2)	−0.00187	
DN Boo	55644.8241	0.0005	II	R (1)	−0.00034	
LR Cam	55840.9676	0.0002	II	R (2)	−0.00032	
NQ Cam	55847.9862	0.0002	II	C (2)	0.00235	
NR Cam	55926.75994	0.0002	I	C (2)	−0.00006	
G4327-2766 Cam	55847.779	0.001	I	C (2)	0.00000	
G4550-1548 Cam	55589.9006	0.0003	I	C (1)	0.00000	
BS Cas	55840.7898	0.0002	I	R (2)	0.00078	
CW Cas	55840.7047	0.0001	I	C (2)	−0.00073	
V0520 Cas	55798.7911	0.0001	II	C (1)	0.00194	
V0537 Cas	55838.7445	0.0002	I	R (1)	−0.00017	
V1060 Cas	55791.7579	0.0005	II	R (1)	−0.00010	
V0736 Cep	55705.882	0.001	I	R (1)	0.00000	
G4267-0682 Cep	55835.6839	0.0003	II	R (2)	−0.00067	
G4481-0080 Cep	55855.6247	0.0005	II	C (2)	0.00000	
G4484-1192 Cep	55839.6983	0.0002	II	C (2)	0.00000	
BB CMi	55916.862	0.001	II	C (2)	−0.00004	
HN CnC	55592.764	0.0002	I	C (1)	0.00345	
IU CnC	55909.937	0.0002	I	C (2)	−0.00056	
LP Com	55646.7451	0.0003	I	C (1)	0.00277	
UX CVn	55627.824	0.001	II	C (1)	0.00193	
BI CVn	55593.9265	0.0001	II	C (1)	0.00027	
DE CVn	55643.7487	0.005	I	C (1)	−0.02497	(b)
DL CVn	55653.742	0.0003	II	C (1)	−0.00061	
DQ CVn	55638.7056	0.0003	I	C (1)	0.00013	
DX CVn	55571.9634	0.0003	II	R (1)	−0.00105	
G2544-1007 CVn	55629.9079	0.0003	I	C (1)	−0.00271	
G2704-1999 Cyg	55714.883	0.001	I	R (1)	0.00000	
G2711-0645 Cyg	55710.89	0.001	II	C (1)	0.00000	
G3581-1856 Cyg	55701.8501	0.0002	!	R (1)	0.00000	
V2477 Cyg	55739.8398	0.0002	I	R (1)	−0.00169	
FU Dra	55626.8412	0.0002	I	C (1)	0.00029	
FU Dra	55626.9956	0.0002	II	C (1)	0.00133	
G4401-1126 Dra	55638.8295	0.0001	I	C (1)	0.00000	
G4420-1984 Dra	55591.9798	0.0002	I	C (1)	−0.00002	

Times of minima:						
Star name	Time of min. HJD 2400000+	Error	Type	Filter	$O-C$ [day]	Rem.
G4421-1217 Dra	55652.9379	0.0002	II	C (1)	0.00000	
G4421-1708 Dra	55685.802	0.002	I	C (1)	0.00000	(a)
G4439-1124 Dra	55659.9328	0.0003	II	C (1)	0.00000	
G4449-0995 Dra	55682.9286	0.0002	II	R (1)	0.00000	(c)
G4449-0995 Dra	55720.8416	0.0003	I	R (1)	0.00000	
QW Gem	55907.7418	0.0003	I	C (2)	−0.00412	
V0367 Gem	55835.9778	0.0002	I	C (2)	−0.00046	
G1335-1812 Gem	55592.657	0.002	I	C (1)	0.00000	
G1338-1984 Gem	55842.9759	0.0003	II	C (2)	0.00136	
G1883-1299 Gem	55833.013	0.003	II	R (2)	0.00000	
G1913-1513 Gem	55591.7373	0.0002	II	R (1)	0.00000	
V0728 Her	55695.8169	0.0003	II	R (1)	−0.00155	
V0829 Her	55658.9126	0.0002	II	R (1)	0.00097	
V1045 Her	55648.8726	0.0003	II	C (1)	−0.00001	(d)
V1071 Her	55590.0483	0.0003	I	C (1)	0.00077	
V1094 Her	55658.8186	0.0005	I	C (1)	−0.00533	
V1100 Her	55653.8851	0.0001	I	C (1)	0.00116	
V1101 Her	55643.9919	0.0001	I	C (1)	0.00166	
G2056-0117 Her	55643.8867	0.0001	I	C (1)	−0.00061	
G3532-0553 Her	55638.9668	0.0003	II	C (1)	−0.00094	
PP Lac	55711.9101	0.0005	I	C (1)	0.00143	
CE Leo	55917.0097	0.0001	II	C (2)	−0.00050	
XX LMi	55589.7767	0.0005	I	C (1)	0.00000	
G2515-0839 LMi	55902.9052	0.0001	I	C (2)	0.00000	
UU Lyn	55851.0346	0.0004	I	C (2)	0.00231	
G0140-0964 Mon	55907.8323	0.0003	II	C (2)	0.00000	
G0170-1717 Mon	55593.7021	0.0003	II	C (1)	0.00000	
G1322-0294 Ori	55902.785	0.0001	II	C (2)	−0.00001	
G1721-1141 Peg	55850.6855	0.0002	I	C (2)	0.00000	
V0578 Per	55798.9632	0.0009	I	R (1)	0.00011	
G2385-0341 Per	55571.6004	0.0001	I	R (1)	0.00001	
G0613-1099 Psc	55902.6186	0.0002	I	C (2)	0.00000	
V0366 Sge	55721.872	0.001	I	C (1)	0.00000	
CR Tau	55893.8458	0.0002	I	C (2)	0.00236	
EQ Tau	55901.675	0.002	I	C (2)	−0.00119	
V0781 Tau	55591.8441	0.0002	I	V (1)	0.00492	
G1305-1430 Tau	55842.85	0.0002	II	C (2)	0.00000	
TY UMa	55916.0343	0.0001	I	C (2)	−0.00228	
HH UMa	55907.97429	0.0003	II	C (2)	0.00472	
KM UMa	55659.75	0.01	II	R (1)	0.01664	
MT UMa	55926.9201	0.0003	II	C (2)	−0.00015	
G4375-0620 UMa	55628.7491	0.0005	I	C (1)	−0.00010	
VY UMi	55682.8051	0.0002	I	R (1)	0.03398	
G4408-0436 UMi	55654.79	0.003	II	C (1)	0.00000	(e)
G2166-0041 Vul	55702.848	0.001	II	C (1)	0.00000	

Remarks:
Star name: G denotes GSC (a) Rough minimum (b) Strange LC with transit (possibly planet?), see Fig. 1. (c) New variable (d) Period is very constant (e) Strange LC. Pair includes pulsating component? (See Fig. 2.) (1) ST-7XE (2) ST-10XE

Note: $O-C$ values were calculated using elements from the $O-C$ database mentioned in the references.

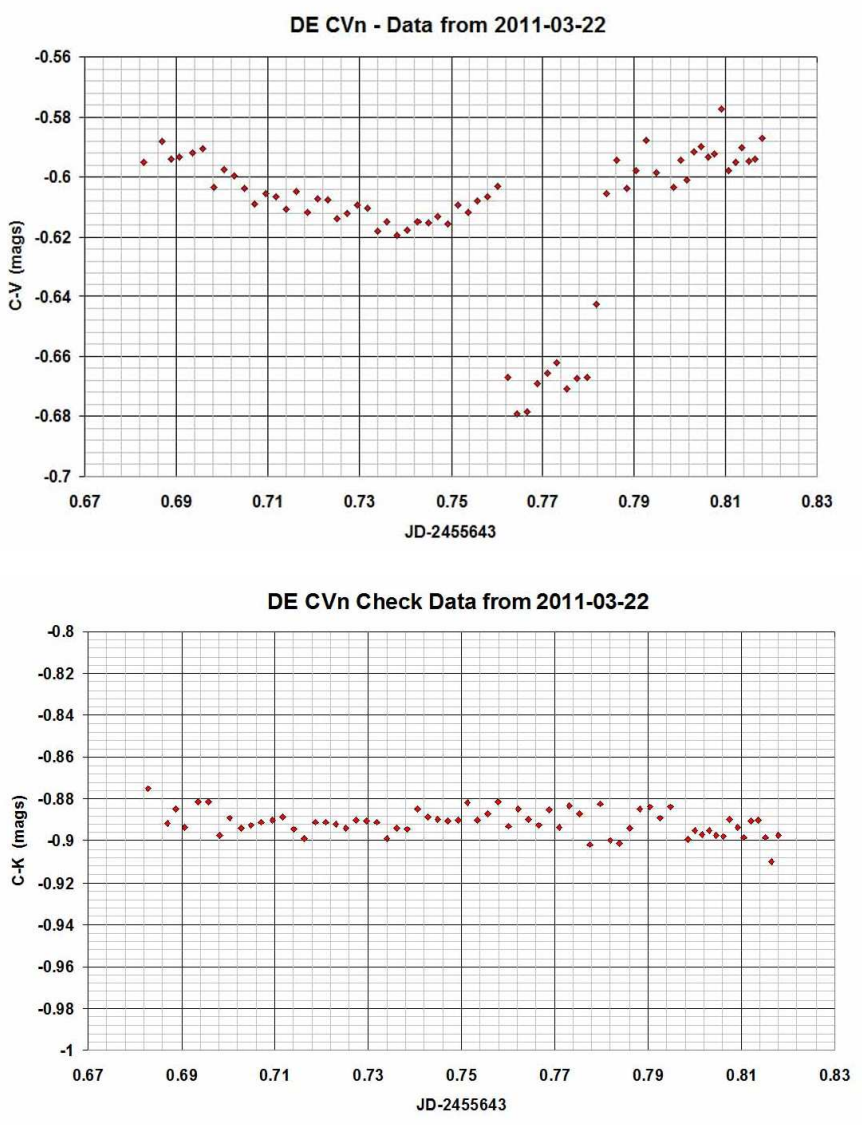

Figure 1. Upper panel: light curve of DE CVn during eclipse. A $0\overset{m}{.}07$ deep transit is visible at around JD 2455643.77. Lower panel: comparison minus check light curve.

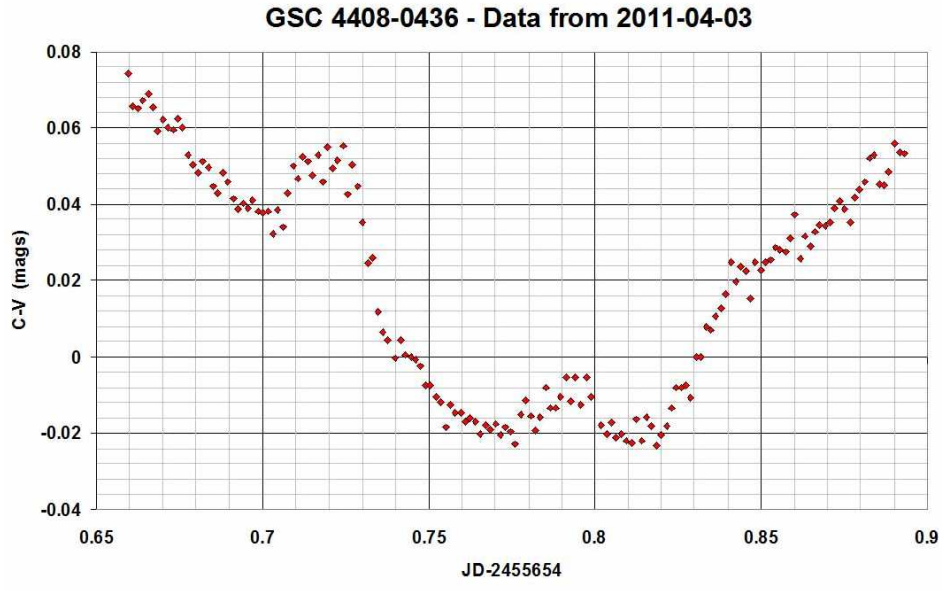

Figure 2. Light curve of G4408-0436 UMi during transit. The data suggest pulsating component.

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 Attilla Danko for his "Clear Sky Charts", (see below). This research has made use of the SIMBAD database, operated at CDS, Strasbourg, France.

References:

Danko, A., Clear Sky Charts, `http://cleardarksky.com/`
Kwee, K.K., & van Woerden, H., 1956, B.A.N. 12, (464), 327
Nelson, R.H., Bob Nelson's O-C Files,
`http://www.aavso.org/bob-nelsons-o-c-files`
Satellite Images for North America,
`http://www.weatheroffice.gc.ca/satellite/index_e.html`