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TIMES OF MINIMUM LIGHT FOR 16 ECLIPSES OF 8 APSIDAL MOTION BINARIES

We report here on the continuation of a program of observing eclipsing binary systems suggested by Gimenez and Delgado (1980), and by Giminez (1985), as candidates for possible detection of general-relativistic apsidal motion.

The observations were made with the 46-cm reflector at Appalachian State University's Dark Sky Observatory. The photometer is a Kitt Peak National Observatory single-channel design employing a thermoelectrically cooled EMI 9865QB photomultiplier tube with matching UBVR filters. An Astronomical Time Mechanisms Model 240V amplifier provides a voltage-to-frequency output that is integrated by a microcomputer.

The observations for a given eclipse were made through one filter only, to maximize the number of data points. The observations have not been transformed to the Johnson system, since they were only intended for timing analysis. The observations are available from the IAU Archives, file number 212.

The times of minimum light and standard errors given in Table I were calculated using the method of Kwee and van Woerden (1956), using a program written by Ghedini (1982). This algorithm has been shown by Caton (1989) to give the most accurate estimation of time of conjunction for asymmetric light curves.

Table I.

System	Type of Eclipse	Heliocentric JD (-2400000)	Comparison Star	Filter
TV Cet	Primary	47147.58576 ±0.00022	BD +01° 566	V
EK Cep	Primary	46724.79762 ±0.00013	BD +68°1239	R
	Primary	47499.66257 ±0.00012	" " "	V
CO Lac	Primary	47084.64270 ±0.00050	(see Note 2)	V
	Secondary	47097.74215 ±0.00015	" " "	V
	Secondary	47495.63488 ±0.00022	" " "	V
	Primary	47502.57676 ±0.00019	" " "	V
RR Lyn	Secondary	47220.67251 ±0.00049	BD +56°1136	V
	Secondary	47568.75226 ±0.00038	" " "	V
V451 Oph	Primary	47307.73282 ±0.00035	BD +10°3526	V
	Primary	47654.79386 ±0.00028	" " "	V
FT Ori	Primary	47132.84835 ±0.00024	BD +21°1161	V
	Primary	47507.74782 ±0.00012	" " "	V
AG Per	Secondary	47480.67474 ±0.00024	BD +33° 776	V
	Primary	47495.79985 ±0.00030	" " "	V
IQ Per	Primary	47102.72767 ±0.00029	BD +47° 923	V

Notes

1) It was noted in preparation for observing EK Cep that this system is misidentified in A Finding List for Observers of Interacting Binary Stars (Wood, et al., 1980). EK Cep is incorrectly identified as BD +69°1197 (their entry number N = 3255), with BD +69°1191 entered as entry number N = 3254, a system of unknown period. Apparently these are the same system EK Cep = BD +69°1191.

2) For CO Lac, the star marked "C" in the finding chart, (Figure 1), was used for the comparison. It also appears that CO Lac itself is incorrectly identified in A Finding List for Observers of Interacting Binary Stars (Wood, et al., 1980), with BD +56° 2857, which is a few minutes to the north-west of the variable. This star was initially tried as a comparison but seemed to be varying on a short time scale. The star marked "K" was used for the check.

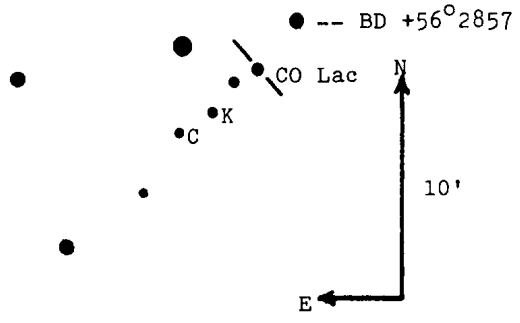

Figure 1

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DANIEL B. CATON
R. LEE HAWKINS
WANDA C. BURNS

Dark Sky Observatory
Department of Physics and Astronomy
Appalachian State University
Boone, North Carolina 28608 U.S.A.

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