TIMES OF MINIMA OF ECLIPSING BINARIES

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We report times of minima of eclipsing binaries derived from photometric observations made by CI at the Ege University Observatory in Turkey in Johnson B, V filters, and at the University of Arkansas (unfiltered CCD observations made by KM). Heliocentric times of minima were estimated for each filter by using the method of Kwee and van Woerden (1956) as adapted to a Macintosh computer. The adopted time of minimum was then the average over both filters for Ege data. In all cases the times of minima in different filters were concordant. Uncertainties in the times of minima were estimated from the values of standard error computed by the method and from differences in times derived from the various filters used. In Table 1, primary eclipses are designated as type 1 eclipses, and secondary eclipses as type 2.

Table 1

Star	JD of Min − 2400000	Type	Observatory	Notes
WW Cam	51134.7232 ± 0.0004	1	Arkansas	
V459 Cas	51144.6845 ± 0.0005	1	Arkansas	
WW Cep	51141.6161 ± 0.0005	2	Arkansas	1
RW Lac	51076.6925 ± 0.0005	2	Arkansas	2
V530 Ori	51199.2593 ± 0.0005	1	Ege	3
BP Vul	51063.6717 ± 0.0003	1	Arkansas	
	51128.645 ± 0.005	2	Arkansas	
	51129.646 ± 0.001	1	Arkansas	

Notes:

1. The period listed in the GCVS is almost exactly 1/3 of the true period found by Torres (1998) from spectroscopic observations as 4.600843 ± 0.000054 days. From dates of minima found in the eclipsing binary minima database at the web site

<div align="center">http://www.oa.uj.edu.pl/ktt/index.html</div>

we find

$$\text{Min I} = 4.600841 \times n + 2449218.4631.$$

From the zero epoch in the GCVS and our observation, assuming a circular orbit (consistent with published dates of minima), we find a period of 4.600849 days, in agreement with the spectroscopic value. The origin of the error in the GCVS period is unknown.

2. Recent spectroscopic observations by Torres (1998) indicate that secondary eclipse now occurs at a phase of 0.491 ± 0.001 due to an eccentric orbit. Our observed time of secondary eclipse is in agreement with this prediction. The eccentricity is approximately 0.014 based on the spectroscopic data.

3. Our observation may be combined with the observations of Lacy & Fox (1994) to yield an orbital period of 6.110777 ± 0.000002 days (assuming a constant period). This appears to be consistent with the period listed in the GCVS, but is more accurate.
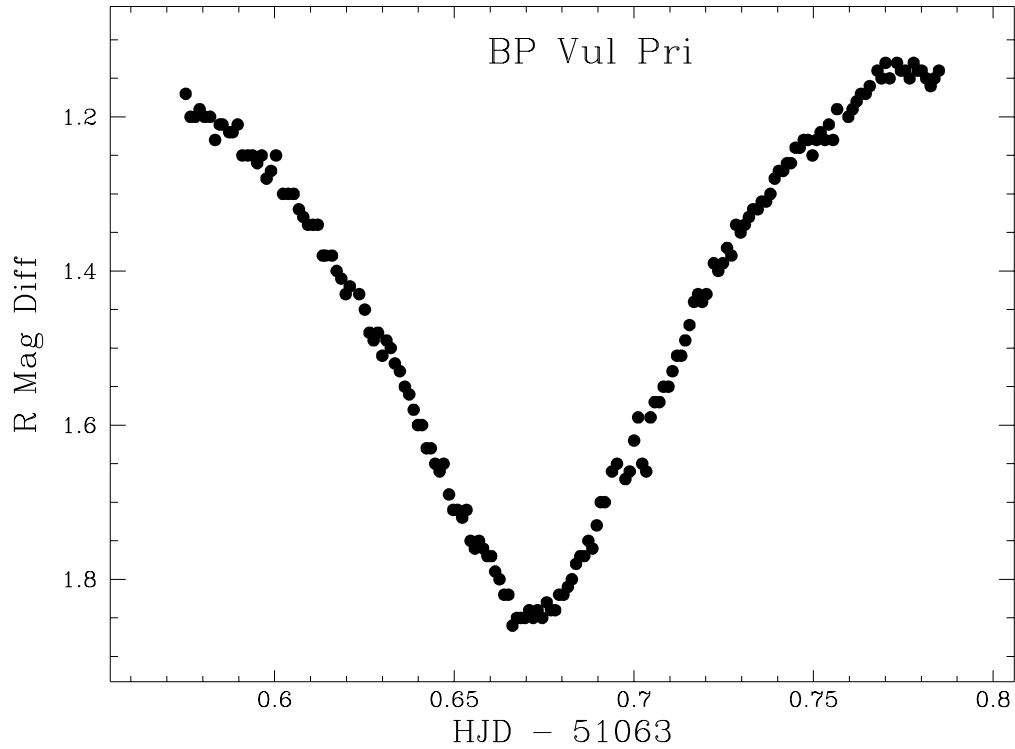

Figure 1. A typical observation of a primary eclipse

References:

Kwee, K.K., and van Woerden, H. 1956, BAN, 12, 327
Lacy, C.H.S., & Fox, G.W. 1994, IBVS, No. 4009
Torres, G. 1998, private communication