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NONCIRCULAR ORBIT OF TU Cam

TU Camelopardalis (HR 2027) is a Beta Lyrae type eclipsing binary of visual magnitude $m_V = 5.1$. One secondary and two primary minima were observed in the period December 1977 - January 1980. The observations were performed by the 0.6 m photometric reflector at the Skalná Pleso Observatory. The star was observed in B and V filters of the standard UBV system and in two intermediate band filters centered at 472 and 527 nm. Times of the observed minima are listed in Table I, which contains also two photoelectric minima published earlier by Wood (1951) and West (1968).

Table I

JD (hel.)	(O-C)	Cycle	Source
2 432 633.655	0.0000	0	Wood (1951)
2 438 051.3755	0.0000	1 847	West (1968)
2 443 495.4960	- 0.0007	3 703	This paper
2 444 174.5778	+ 0.0349	3 934.5	"
2 444 243.4751	0.0000	3 958	"

From the minima listed in the first and in the last lines of Table I, we derived the following ephemeris:

$$JD (\text{Min I}) = 2\,444\,243.4751 + 2.933\,2542 \times E.$$

The value of the period is equal to that found by West (1968). The (O-C) values corresponding to our ephemeris are given in column 2 of Table I. There is a notable high value of (O-C) for the secondary minimum observed at JD 2 444 174, that corresponds to the phase 0.512. West (1968) did not find

any displacement of the secondary minimum, and hence he assumed a circular orbit for the TU Cam system. His observations, however, do not cover satisfactorily the vicinity of the secondary minimum.

Spectroscopic orbits for TU Cam were computed by Harper (1924), Luyten (1936) and Mannino (1954) with the eccentricities 0.030, 0.040 and 0.037, respectively. As West pointed out, the mean value of the eccentricity, $e = 0.035$ from these spectroscopic orbits leads to the shift of the secondary minimum to the phase 0.522.

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