COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS
Number 3819

Konkoly Observatory
Budapest
18 December 1992
HU ISSN 0324 - 0676

A NEW EPHEMERIS FOR TX URSAE MAIORIS

From a preliminary analysis of observed primary minima, Plavec (1960) has determined U$\approx$ 50 years for the assumed apsidal period. In fact, TX UMa is the only semi-detached binary system in which apsidal motion could still be postulated, as it was emphasized by Semeniuk (1968).

Moreover, the new primary minima, observed after Plavec's (1960) paper was published, show that a new study of the corresponding orbital period may be undertaken. In order to do so, we have used Plavec's table of primary minima, which was completed with observed minima obtained subsequently. Then we have constructed the O−C diagram where the O−C differences refer to the linear formula:

Min. hel. = J.D. 2416426.783 + $3^{d}.0633175 \times E_1$.

As it is shown in Figure 1, the run of the normal residuals clearly puts in evidence the fact that the corresponding diagram could not be caused only by apsidal motion. It was impossible for Plavec to reach this conclusion in 1960 because the time interval covered by observed minima was too short.

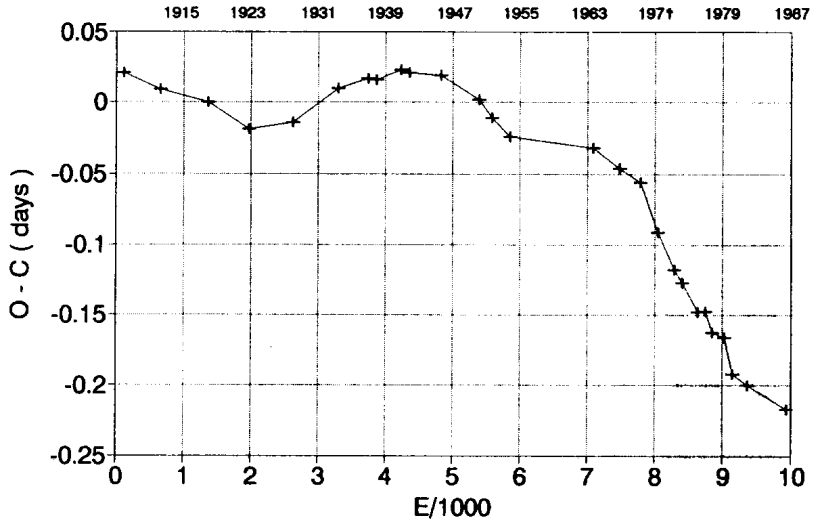

Figure 1.

Anyhow, TX UMa could have an apsidal motion superimposed on the light–time effect or strong period variations due to the mass exchange. This is why this binary system needs new observed minima, especially some secondary minima in order to remove the contribution of the apsidal motion effect.

For the near future the following ephemeris can be used for the prediction of the primary minima:

Min. hel. = J.D. 2441766.427 + $3^{d}.0632455 \times E_2$.

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