

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS

Number 1783

Konkoly Observatory
 Budapest
 1980 May 12

NEW PHOTOELECTRIC TIMES OF MINIMA AND THE PERIOD
 VARIATIONS OF THE ECLIPSING VARIABLE W UMa

The short period eclipsing variable W Ursae Majoris (BD +56°1400, HD 83950) has been observed photoelectrically with the 48 cm Cassegrain telescope equipped with an unrefrigerated EMI 9781 A photomultiplier between 23 January and 13 March, 1980. The observations were made in two colours B and V which are approximately in the standard system.

BD +56° 1399 was used as comparison star during the observations.

Only the times of primary minima are obtained and are listed in the following table:

JD Hel.	E	(O-C) _I	(O-C) _{II}	n	filter
2444000.0					
262.36930	18809	-0.00355	-0.00322	23	B,V
275.38142	18848	.00331	.00302	30	B
.38156	18848	.00317	.00288	30	V
279.38554	18860	.00285	.00257	27	B,V
280.38656	18863	.00274	.00247	23	B
.38663	18863	.00267	.00240	23	V
298.40353	18917	.00223	.00201	21	B,V
312.41662	18959	.00194	.00176	35	B,V

n: number of observations within minima.

The (O-C)_I and (O-C)_{II} values given in the table were calculated from the following linear (Equ.1) and sinusoidal (Equ.2) light elements given by Tunca et al. (1979), respectively.

$$\text{Min I} = \text{JD Hel. } 2437986.9742 + 0.33363808 \cdot E \quad 1$$

$$\text{Min II} = \text{JD Hel. } 2437986.97426 + 0.33363808 \cdot E + 0.00302 \cdot \sin(E \cdot 2\pi / 19200.9) \quad 2$$

The photographic, photoelectric times of Min I from 1903 to 1980 March and the visual times of Min I before 1930 were collect-

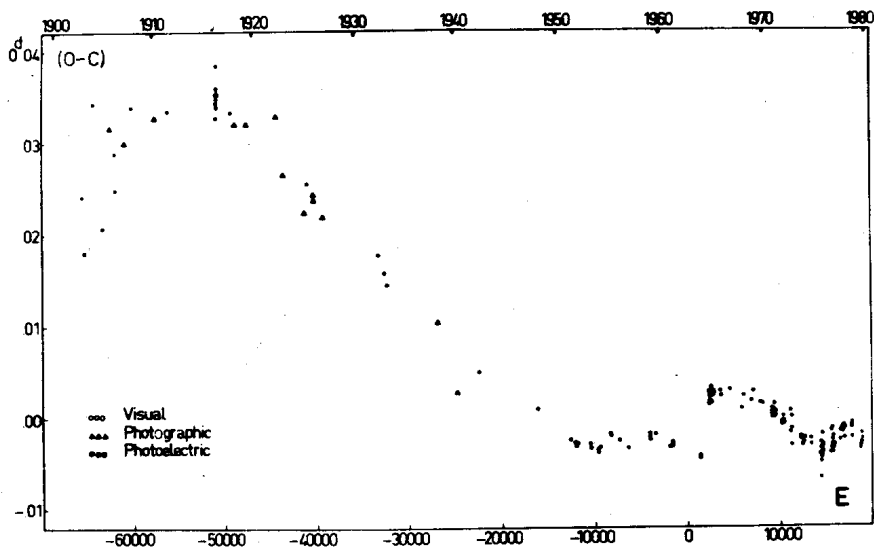


Fig. 1

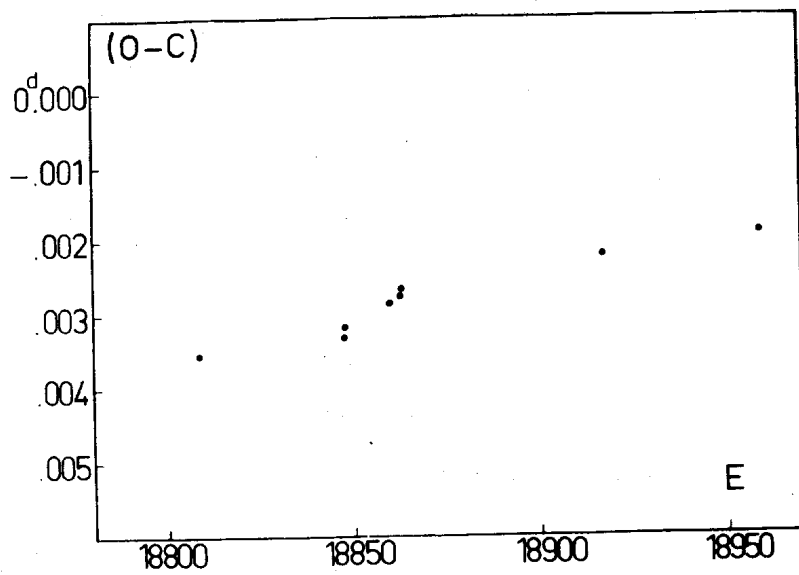


Fig. 2

ed and the (O-C) values were calculated from the Equ.1, and plotted against cycles. The whole (O-C) variation is shown in Figure 1.

It can be seen from Figure 1 that the complete (O-C) variation cannot be represented with one equation (linear or sinusoidal). Therefore, the different light elements were given by several authors to represent the (O-C) variation for the different short interval of cycles. For instance, the Equation 2 represent the (O-C) variation which is between the cycles 1000 and 18000.

The $(O-C)_I$ values given in the table are plotted in Figure 2. From this Figure, it appears that the (O-C) variation is linear. There are some regular variations in short interval of cycles. However, the complete (O-C) diagram and as a result the period of the system, show irregular variations over the whole cycles in general.

O. TÜMER, S. EVREN, Z. TUNCA
Ege University Observatory
Bornova - Izmir - Turkey

Reference:

Tunca, Z., Tümer, O., and Evren, S., 1979, I.B.V.S. No. 1607