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**ECLIPSE CURVES OF UX UMa IN 1992**

UX UMa is considered as an example of relative orbital stability for an interacting binary although the shape of its light curve is quite variable. Besides eclipses and flickering Mandel (1965) proposed that the orbital period itself of this eclipsing binary varies with a period of 10600 days.

The presented photoelectric data of UX UMa were obtained during 8 nights at the end of December 1992 and at the beginning of January 1993. The observations were carried out with a 0.6 m telescope of Mt. Suhora Observatory (Poland), equipped with a double beam photometer and an autoguider (Kreiner et al., 1992). In order to satisfy the requirement of the two-channel photometer (that the distance between a variable and a comparison star to be between 10 and 20 arcmin), we used the star marked "B" in Figure 1 as a comparison and BD+52°1720 (marked "N") and BD+52°1722 (marked "C") as check stars. Figure 2 shows that the star "B" is constant.

The data were phased according to the ephemeris of Mandel (1965)

$$\text{MIN} = \text{J.D.}(\text{Hel})2427341.22392 + 0.196671299 \times E \quad (1)$$

Some of our eclipse curves are presented in Figure 3. On the right side on every curve is the cycle number introduced in Table 1 (down). The magnitude difference in the sense comparison-variable on the vertical axis is relative to the central curve in every colour. The other curves are moved up or down to get a good visibility. (The U curves are omitted from Figure 3 because their quality is too poor.)

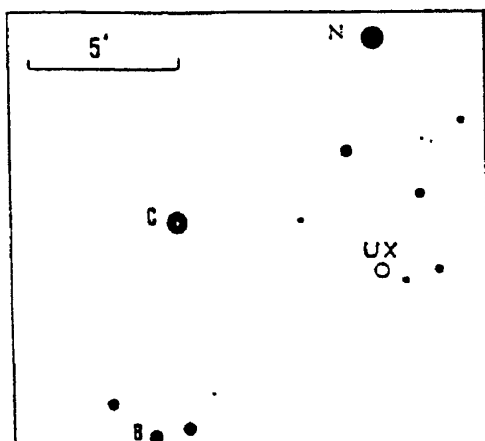


Figure 1

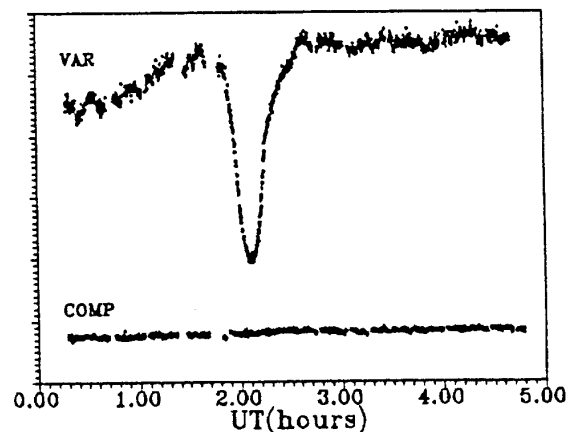


Figure 2

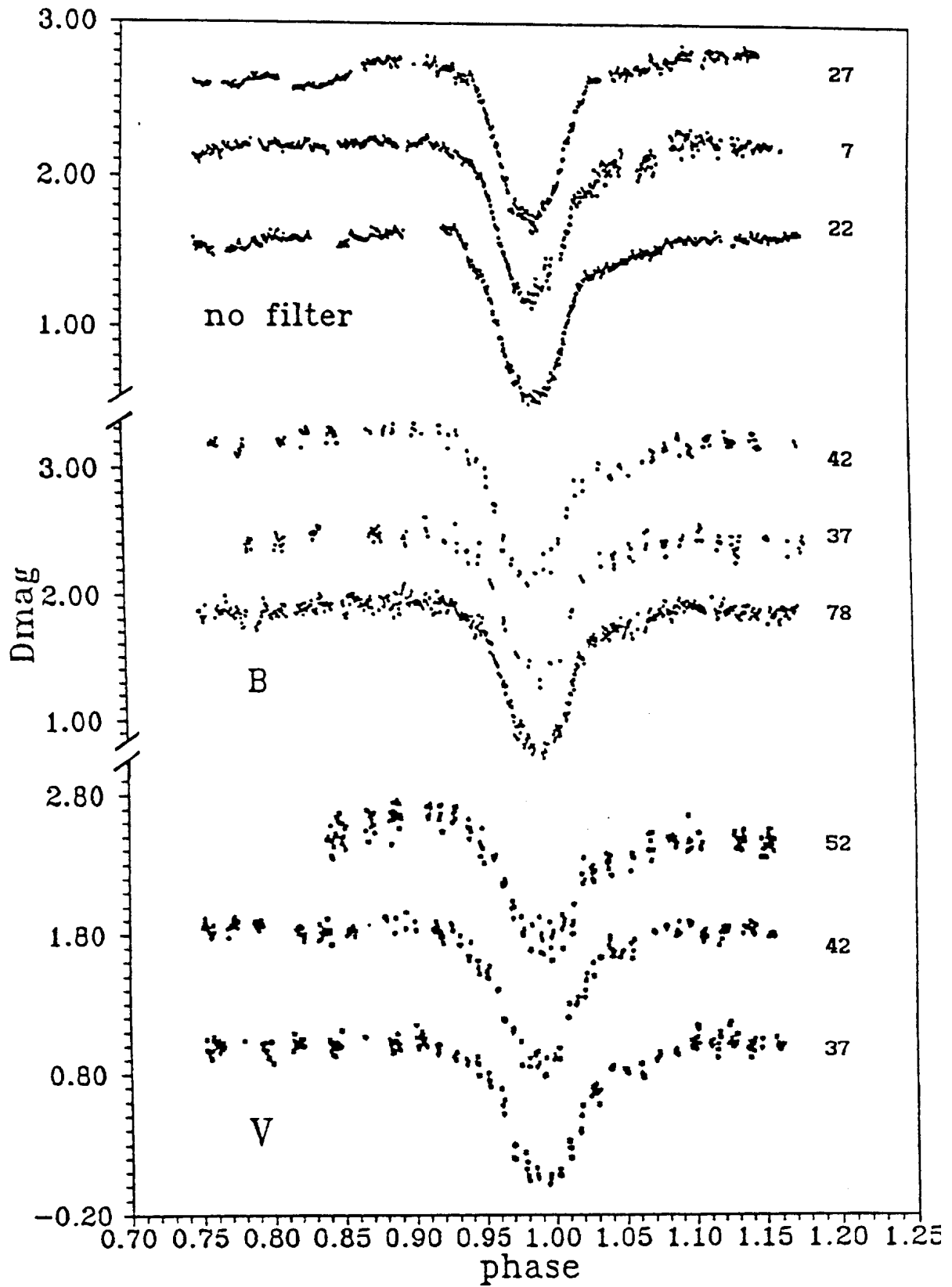


Figure 3

Table 1 includes the observed times of minima with the errors of their determination and respective O-C values according to the ephemeris (1).

Table 1

Cycle number E 110000 +	Filter	Minima J.D.(Hel.) 2448900.+	O–C
7	no	76.63824±0.00015	–0.00194
22	no	79.58831±0.00002	–0.00194
27	no	80.57149±0.00002	–0.00212
31	no	81.35816±0.00003	–0.00213
32	no	81.55583±0.00010	–0.00114
37	U	82.53816±0.00033	–0.00206
37	B	82.53831±0.00042	–0.00191
37	V	82.53844±0.00060	–0.00181
42	B	83.52089±0.00025	–0.00279
42	V	83.52137±0.00022	–0.00231
43	B	83.71715±0.00054	–0.00320
43	V	83.71796±0.00038	–0.00139
52	B	85.48882±0.00014	–0.00157
52	V	85.48858±0.00010	–0.00181
53	U	85.68473±0.00079	–0.00233
53	B	85.68531±0.00030	–0.00175
53	V	85.68539±0.00035	–0.00167
78	B	90.60191±0.00005	–0.00194

Analysis of our eclipse curves allows us to draw the following conclusions:

(1) The times of minima in different colours in the same cycle coincide within the errors of their determination. The small differences between the times of the minima in different colors, when observed simultaneously, show that the minima occur in a sequence U, B and V (except for cycle 52).

(2) The mean phase of our observations relative to the Mandel’s 29.02 yr cycle (Nather & Robinson, 1974) is

$$\psi = (\text{J.D.Hel.} - 2435000) \times 0.0000934 = 0.32 \quad (2)$$

Then it turns out that our mean O–C residual value  $-0^{\text{d}}00199$  (marked as a diamond in Figure 4) falls just on the periodic curve adapted from Quigley & Africano (1978), i.e. our observational data support 29.02 yr cycle of UX UMa.

(3) In this observational season we obtain the mean orbital period of  $0^{\text{d}}1966714$ . This value is very near to that of Mandel (1965) and Kukarkin (1977).

(4) The shape of the eclipse curves in the same colours changes from cycle to cycle. Usually the bottom of the eclipse is almost symmetric with respect to the light minimum, but in some cases its rising branch is deformed. Similar peculiarities were seen by Warner & Nather (1972);

(5) The mean duration of the whole minima in different colours is about 42 minutes and the mean duration of the stillstand on the ascending branch of the eclipse is about 17 minutes;

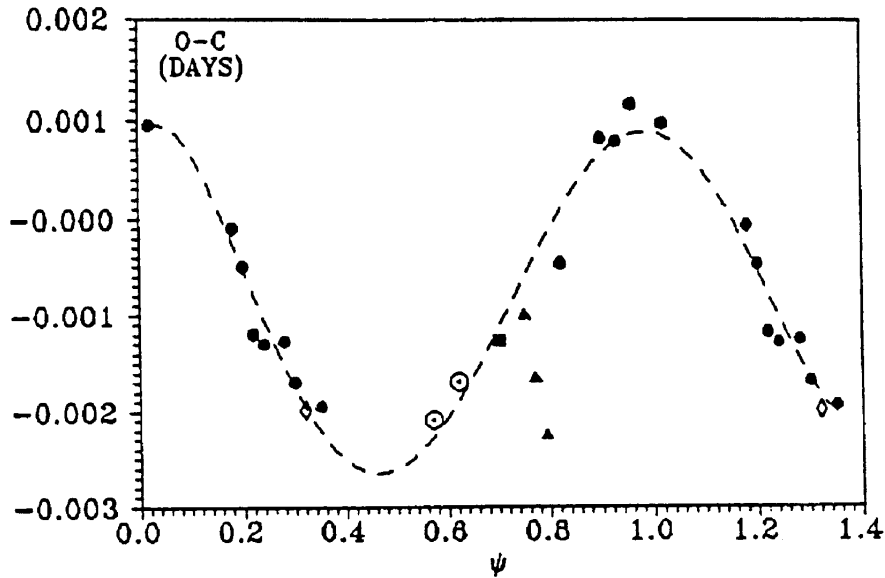


Figure 4. O–C residuals according to Mandel's 29.02 yr cycle

(6) The mean depth of minima in different colours is respectively  $\Delta V=1^m$ ;  $\Delta B=1^m25$ ;  $\Delta U=1^m5$ .

(7) A small stillstand is visible on the descending branch of the eclipse nearly symmetrically to the one on the ascending branch. It is most apparent in the cycles 22 and 42. This feature is more clearly visible in B than in V.

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Diana P. KJURKCHIEVA  
 Dragomir V. MARCHEV  
 Shoumen University,  
 9700 Shoumen,  
 Bulgaria

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