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NEW PHOTOELECTRIC LIGHT CURVES OF VZ CANUM VENATICORUM

The variability of VZ CVn was discovered by Strohmeier and Knigge (1960), who reported it to be a short-period variable star with an amplitude of $0^m.7$. In 1962 Strohmeier, Knigge and Ott determined that VZ CVn was a β Lyrae system with a deep secondary minimum. From 22 epochs of primary minimum and 13 epochs of secondary minimum, they derived the light elements:

$$\text{Min.I} = \text{JD}_\odot 2426002.700 + 0^d.8424635 \times \text{E} \quad (1)$$

In 1965 Oburka reported three epochs of primary minimum for VZ CVn obtained with binoculars. The first photoelectric light curves in BV bands were obtained in 1965 by Harris (1968), who got 2 epochs of primary minimum and 2 epochs of secondary minimum. The epochs of these minima and the minima of other observers, together with the weights assigned to them are processed with the aid of the least squares method. The improved light elements are:

$$\text{Min.I} = \text{JD}_\odot 2426002.6956 + 0^d.84246261 \times \text{E} \quad (2)$$

In 1971 and 1972 VZ CVn was observed photoelectrically by Ibanoğlu (1974) in BV bands, he observed 4 primary and 5 seondary minima. The epochs of these minima and the minima of Harris and other observers were used together to determine improved light elements by the method of least squares:

$$\text{Min.I} = \text{JD}_\odot 2438880.5807 + 0^d.84246150 \times \text{E} \quad (3)$$

In 1972 Pohl and Kizilirmak reported 13 epochs of minima separately for each color, in 1974 they published 2 epochs of minima, in 1977 they gave an epoch of minimum again. From 1971 to 1976 Cester, Mardirossian and Pucillo (1977) observed VZ CVn in UBV bands, 22 new epochs of minimum were deduced separately for each color from the observations. All photoelectric minima were taken into account for a re-determination of the light elements by means of least squares method, giving the same weight to the single epochs and considering only the mean value of their U, B and V minimum. The new light elements are

$$\text{Min.I} = \text{JD}_\odot 2438880.5804 + 0^d.84246163 \times \text{E} \quad (4)$$

The present observations of VZ CVn were made in BV bands on 7 nights from 1993 to 1994 with photoelectric photometer attached to 1m reflecting telescope at Yunnan Observatory, the comparison star and the check star are the same which have been used by the previous observers: BD+29°2417 and BD+29°2409 respectively. The new light curves (612 points in B and 610 points in V band) are displayed in Figures 1 and 2, all the observational data have been corrected for the atmospheric extinction. The new light curves were found to be variable near the maxima similary to the observations of previous observers. In addition, the new light curves showed some pulsational variations near the

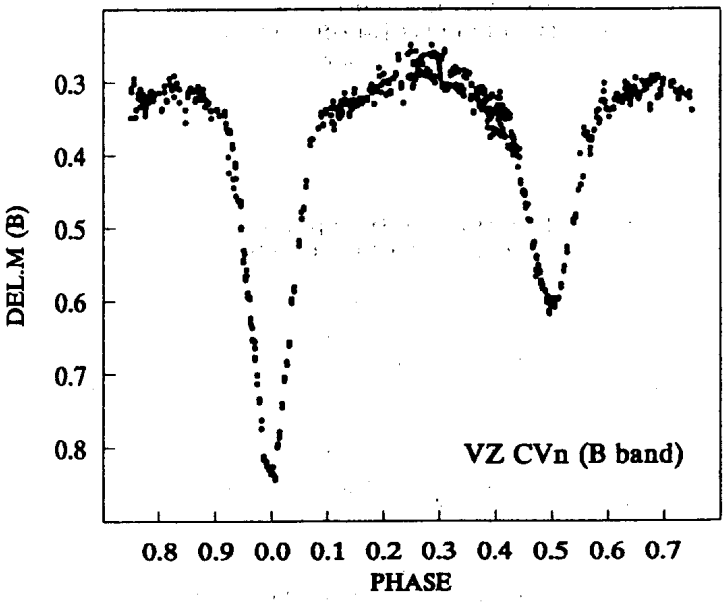

Figure 1. The light curves of VZ CVn in B band

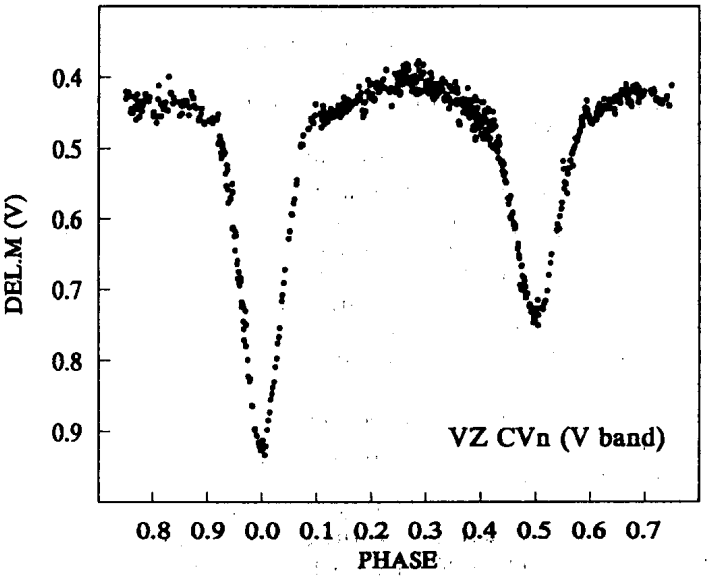

Figure 2. The light curves of VZ CVn in V band

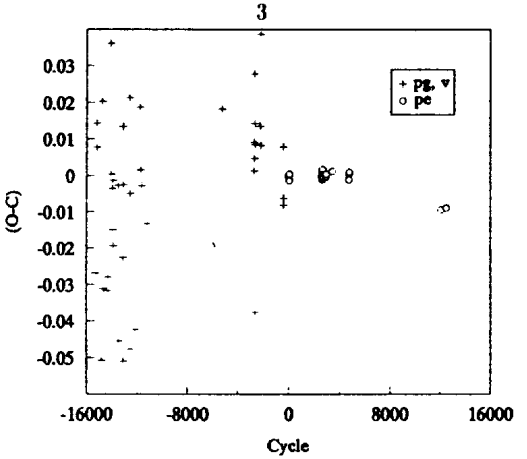

Figure 3. The O−C diagram

maxima. From our observations an epoch of primary minimum and an epoch of secondary minimum were calculated and are listed in Table 1. In this table the O−C residuals were computed according to Cester et al.'s light elements.

We collected all minima available, in order to calculate the O−C residuals using formula (4). The O−C diagram is plotted in Figure 3. From this diagram a systematic trend, i.e. decreasing period of VZ CVn is suspected. This is also seen when comparing formulae (1) and (3). The detailed analysis of this system will be published elsewhere.

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