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INFRARED LIGHT CURVES OF THE ECLIPSING BINARY VW CEPHEI

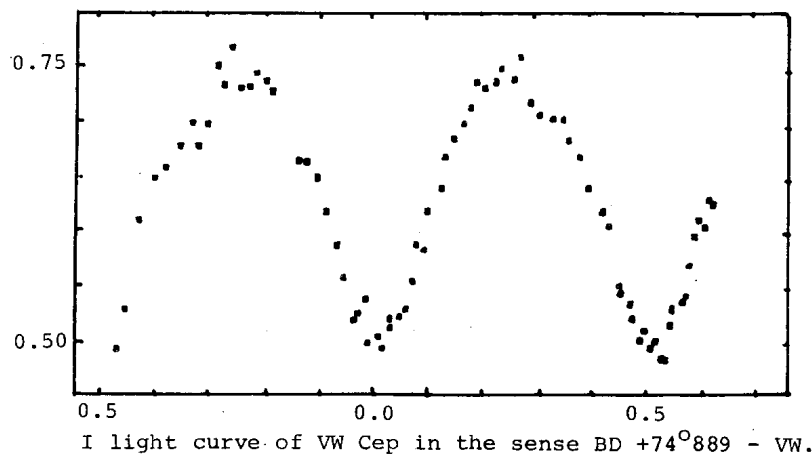
The VW Cephei system is a contact binary of W UMa type with a W type light curve (Binnendijk 1970). Variable period as well as variable light curve have been reported (Kwee 1966 a,b - Van't Veer 1973). A description of the system in terms of hot spot and shell has recently been suggested by Pustyl'nik and Sorgsepp (1976), as a tentative explanation for the peculiarities of the light curves. Three infrared light curves at 1.03 and 2.2 μm are reported here, each of them being obtained during a single night, by continuously alternating variable and comparison observations.

Observations

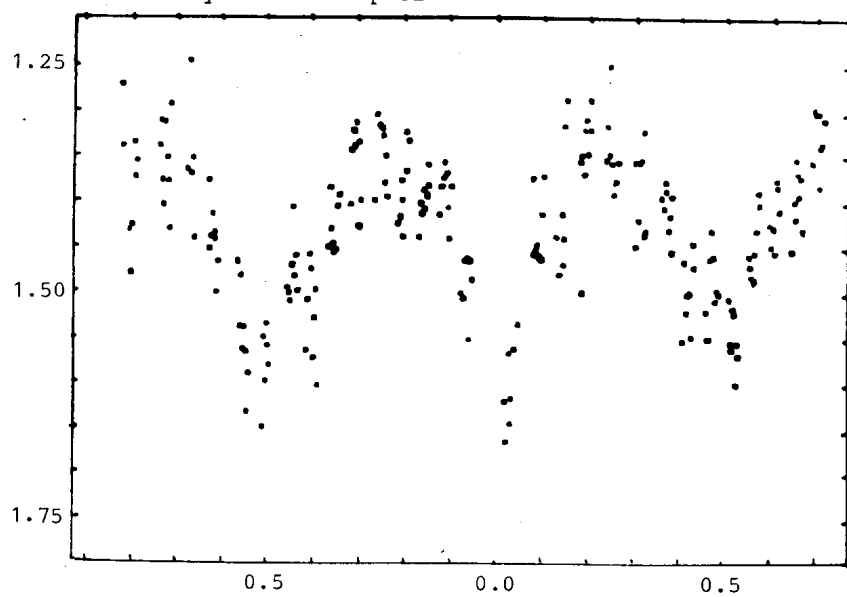
The light curve observed during the night April 17-18, 1971 is shown in Figure 1. The measurements were obtained with the

Figure 1

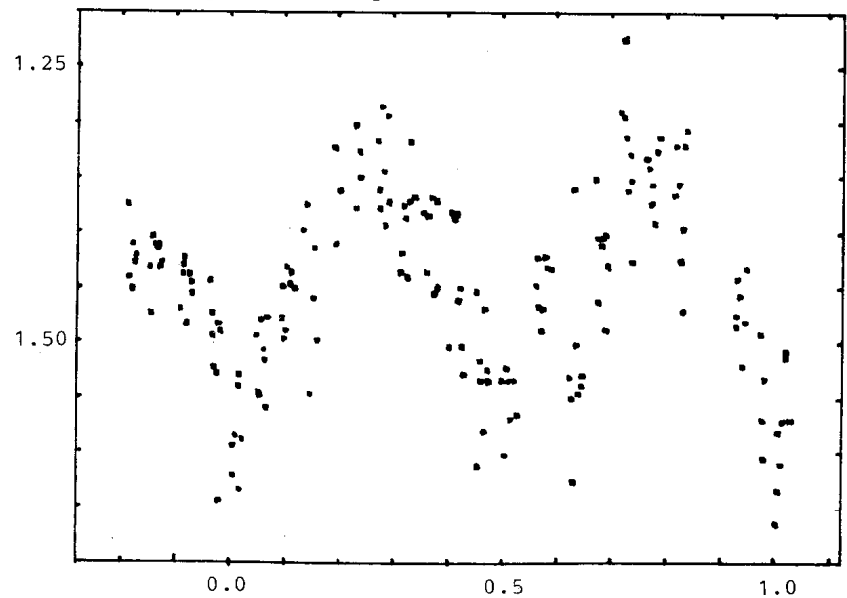
17 April 1971 VW Cephei I



21 January 1976 VW Cephei K



22 January 1976 VW Cephei K



Figures 2 and 3: K light curves of VW Cep in the sense
VW - BD + 75^o764

80 cm telescope of the Observatoire de Haute-Provence, a cooled S1 photomultiplier and a filter for the I band at $10\ 300\ \text{\AA}$. The star BD +74°889 (G5, $m_V=7.9$) was used as a comparison star while BD +74°902 (F8, $m_V=8.4$) was a check star. The epoch for the observed primary minimum was determined by the method described by Kwee and Van Woerden (1956). We obtained: J.D. 2441059.4940 and O-C = -0.0674 in good agreement with the O-C diagram from Van't Veer (1973) and Hopp et al. (1976).

The light curves of Figures 2 and 3 were observed at the Cassegrain focus of the 193 telescope of the Observatoire de Haute Provence during the nights January 21-22 and 22-23, 1976. A 77° K/Pb S photometer was used together with a K band-filter ($\lambda=2.2\ \mu\text{m}$).

The star BD +75°764 (G5, $V=6.1$) was used as a comparison star, while BD +74°889 was a check star. The following elements were deduced for the primary minimum:

1976 January 21-22	J.D. 2442799.522	and O-C = -0.083
22-23	J.D. 2442800.351	and O-C = -0.089

which gives a mean O-C = -0.086 in good agreement with the diagram of Hopp et al. (1976).

Discussion

The poor signal to noise ratio of the K observations does not allow to ascertain whether the perturbations of Figures 2 and 3 are intrinsic to the system or due to fast atmospheric variations. Minima I and II display about the same depth at both $1.03\ \mu$ and $2.2\ \mu$, with nearly equal maxima. The mean amplitudes are 0.25 mag at $\lambda=1.03\ \mu\text{m}$ and 0.22 mag at $\lambda=2.2\ \mu\text{m}$ which can be compared to mean value 0.36 mag at $\lambda=0.44\ \mu\text{m}$ (B colour) and 0.33 mag at $\lambda=0.55\ \mu\text{m}$ (V colour) from Kwee (1966b) and Hopp et al. (1976). The amplitude decrease with increasing wavelength is thus confirmed throughout the infrared domain.

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