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B, V PHOTOMETRY OF ER VULPECULAE

The double-lined spectroscopic and eclipsing binary ER Vul has received more attention in recent years, when Hall (1976) included it into the short period group of RS CVn-type binaries. Many light curves of it were obtained in order to reveal and understand the cause of the variations. Since 1981 the short period RS CVn binaries ER Vul, UV Psc, and SV Cam have been observed at the Ege University Observatory. The light curve variations of the peculiar eclipsing system ER Vul have been discussed recently by Ibanoglu et al. (1987). The photometric results of 1984 and 1985 observations are still in preparation. In this paper we present the 1986 blue and yellow light curves of the system.

The observations were obtained with the 48 cm Cassegrain telescope of the Ege University Observatory. An EMI 9781A photomultiplier and standard B and V filters were used. HD 200270 was chosen as comparison and HD 200425 as check star . The differential magnitudes in two colours were taken as variable minus comparison. These magnitudes were also corrected for atmospheric extinction. The following light elements given by Ibanoglu et al. (1985) were used in computing the phases of the individual observations:

$$\text{Min I} = \text{J.D. Hel. } 2440\,182.2621 + 0^{d}.69809409E.$$

Two different light curves were obtained with an interval of a month in each colour. The light curves are shown in Figures 1 and 2. As it is clearly seen from these Figures the system seems to be too active at the end of June, 1986. Short-term,non-periodic light fluctuations seem to be the main characteristics of the system. However, a month later it appears to be fairly quiet. The system is brighter at the first maximum than it is at the second. The descending and ascending branches of both minima are generally asymmetric. The mean brightness of the system reaches its maximum value at about phase 0.35 and it decreases rapidly until phase 0.6, then, it remains almost constant for a long

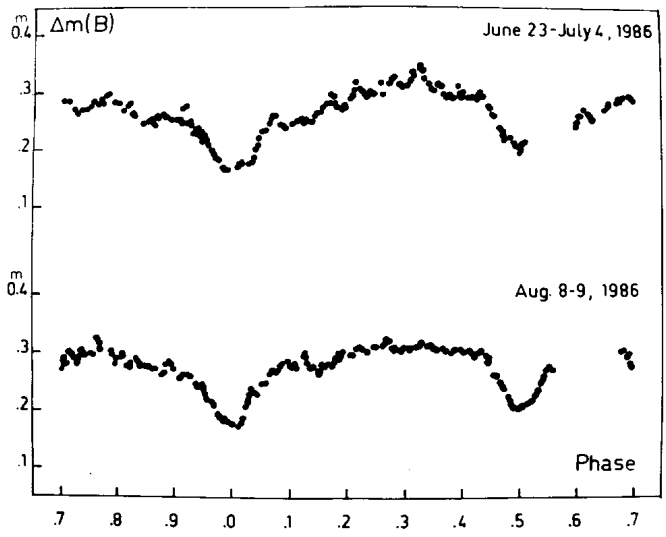

Fig. 1: The blue light curves of ER Vul obtained in 1986.

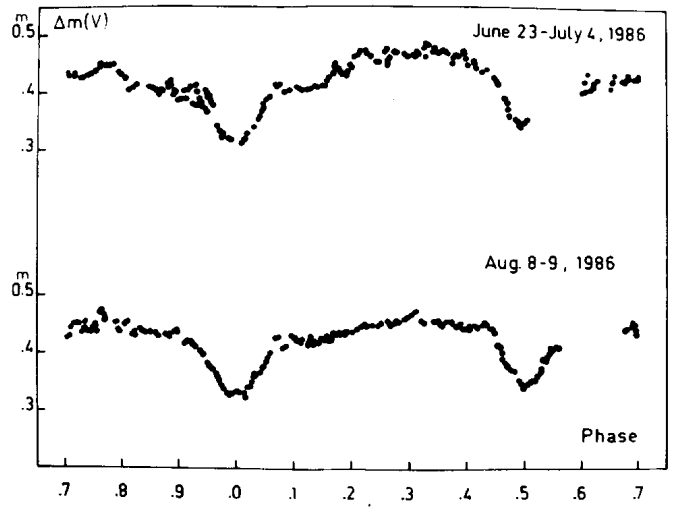

Fig. 2: The yellow light curves of ER Vul obtained in 1986.

phase interval, until about phase 0.1. Therefore, it is too difficult to make any decision about the phase of minima of the wave-like distortion. The phase of the wave-minima obtained so far were plotted versus years. Despite the scattering of the points, the wave-like distortion superimposed on the light curves moves towards the decreasing orbital phase with a period of about eight months. The nonstationary state of the system ER Vul is studied by Botsula (1985) who concluded that gaseous matter exists in the system. The light fluctuations in the light curves may be the result of this event.

M.C.AKAN, C.IBANOGLU, Z.TUNCA,
S.EVREN and V.KESKIN

Ege University Observatory
Bornova, Izmir/TURKEY

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