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THE LIGHT CURVE OF ER VULPECULAE

Observations of ER Vul were carried out in the newly founded Middle East Technical University (METU) Observatory in Ankara. These are the first observations in the METU Observatory situated on the Campus of the Middle East Technical University which went into operation at the end of 1990. It is about 10 kilometers from the city of Ankara. The observatory is attached to the Physics Department at METU in which teaching is in English. In the University, astronomy teaching has been going on since 1962. At present there are 8 astronomers with Ph.D. and 8 graduate students studying astronomy and astrophysics.

The coordinates of the Observatory are:

Geographical latitude: $39^{o}\ 53'\ 6\overset{''}{.}1$

Geographical longitude: $2^{h}\ 11^{m}\ 10\overset{s}{.}5$

Height above the sea level: 949m.

Although the number of totally clear nights is about 100, the number of clear nights good for observations varies from 150 to 200.

The METU Observatory contains a telescope of Cassegrain type with a 40cm mirror and SSP-3 solid state photometer attached to it. In addition it is expected to install a CCD Camera (Astrolink Cryo, Cam 80, 572x485 pixel) in a year.

Photometric observations of the system ER Vul were done in blue and yellow lights with B and V filters on June 15, 17, 18 and 28, 1991. ER Vul was also observed at the Ege University observatory in 1981 and 1982. The results were presented in a paper by Ibanoglu et al. (1987). They found that the light curves obtained in two colours showed changes in short time intervals. Observations done on the system so far indicate that we need to perform further observations to clarify exactly what the cause of such a variation in the observed light curve may be. Detailed description of the system including full list of references of the previous works on this star can be found in Hill et al.'s (1990) paper.

The components of the system are known to have spectral types GOV and G5V. ER Vul is known as HD 200 391 with $\alpha = 21^{h}\ 02^{m}\ 25\overset{s}{.}7$, and $\delta = +27^{o}\ 48'\ 26''$

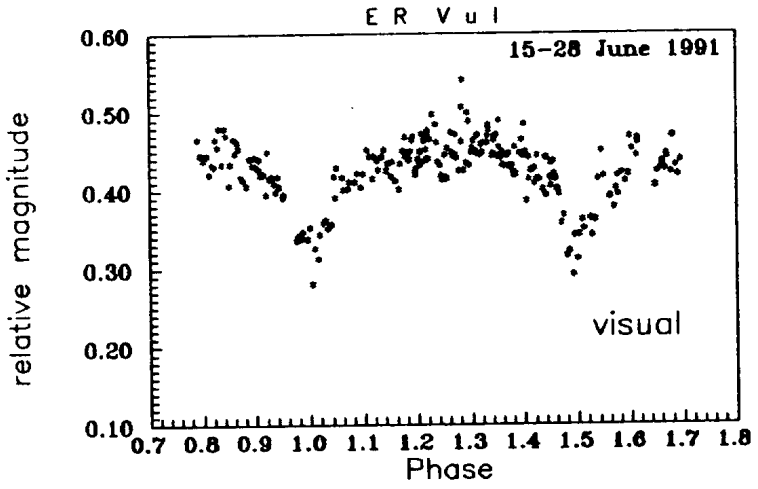

Figure 1. The Light Curve of ER Vul in yellow light.

(2000). The star HD 200270 was chosen as the comparison star. The differential magnitudes in two colours were taken as variable minus comparison. The atmospheric extinction coefficients were computed and then the effect of the atmospheric extinction was removed. The phases of the individual observations were computed using ephemeris

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

after heliocentric correction. Finally differential observations versus orbital phases were plotted and the one in yellow colour is presented in Figure 1. The standard deviation for our observing system has been found to be 0.017 ± 0.005 in magnitude.

As it has been noted by previous observers, distortions in the light curve are noticeable at the first glance. There is an irregular variation in the light curve. The variability in the light level outside the eclipses, especially in the phase range from about 1.1 to 1.4 is conspicuous. The amplitude of the variation is larger than 0.10 magnitude. The wave-like variation is clearly seen in the Figure.

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