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PHOTOMETRIC OBSERVATIONS OF THE CLOSE BINARY

DH CEPHEI

DH Cep (BD+57° 2607, HD 215835) is an early type (O5-6 V), massive, double-lined spectroscopic binary with the orbital period equal to 2.11 days. In 1949 Pearce determined spectrographically the orbital eccentricity of the star as equal to 0.127. He also suggested a fast apsidal motion of the system. These reasons made that the star was included into a programme of photometry of the stars with apsidal motion conducted by the author in early sixties. The lack of other photometric observations required as reference for check of the apsidal motion and also some incompleteness of the obtained light curve discouraged the author from publishing the observations in those old times. As in the meantime some other photometric observations of the star were obtained (Lines et al., 1986) it is perhaps worthwhile to publish also the old ones that could serve for comparison in future investigation of the object.

The photoelectric observations of DH Cep were carried out in the period between June 25 and October 23, 1963 in the Crimean Astrophysical Observatory with a 20-cm (MTM-200) telescope equipped with one channel photoelectric photometer with the V (GG 11) filter. The photometry was differential. The star BD+56° 2865 (HD 215923) was used as the comparison.

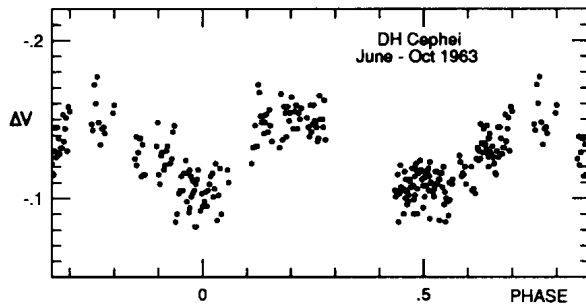


Figure 1. The light curve of DH Cep obtained in 1963.

Fig. 1 presents the light curve of DH Cep.  $\Delta V$  denotes the difference of the instrumental V magnitudes between the variable and comparison stars. The phase was calculated using the ephemeris:

$$\text{HJD Min} = 2438272.358 + 2.11104 E.$$

The period in the ephemeris is the spectrographic period of Pearce (1949), while the epoch was determined on the basis of the present observations.

The light curve resembles in outline the light curves of DH Cep obtained 22 years later by Lines et al. (1986). Like the observations of those authors also the 1963 light curve does not show any evidence of the periastron motion. The two minima also appear about one half period apart. It indicates (what was already suggested by Lines et al.) that the spectrographic eccentricity of Pearce must be spurious, unless the longitude of periastron is, both in 1963 as in 1985, equal to  $90^\circ$  or  $270^\circ$ . In that case the apsidal motion period might be 22 or 44 years.

Fig. 1 shows also a slight difference in the shape of the two minima. Like in the Lines et al. observations the minimum

at 0.0P appears to be sharper and narrower than the minimum at 0.5P. Assuming that the corresponding minima in the two epochs (1963 and 1985) are due to the same geometric configuration in relation to observer, we can try to determine a photometric period of DH Cep. The values closest to the Pearce value are 2.11093 and 2.11149 days. Additional photometric observations are needed to obtain a real value of period.

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**References:**

- Lines, H. C., Lines, R. D., Guinan, E. F., and Robinson, C. R.  
1986, *Inf. Bull. Var. Stars*, No. 2932.  
Pearce, J. A., 1949, *Astron. J.*, 54, 135.