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UBVR PHOTOMETRY OF THE ACTIVE ECLIPSING
 BINARY DN CEPHEI

Light variability of DN Cep (=SVS 894=VV 345; $m=11.98-13.02$ pg; SP=B5) was described by Parenago (1938). Since, the only known observations of the binary have been made photographically by Miller and Wachmann (1971). The authors determined the light ephemeris of DN Cep. The secondary minimum was not seen on the curve. The binary is situated in the region of the Cep OB1 association.

In 1990/92 the observations of the DN Cep were made in UBVR filters with the 0.6 m telescope on Mt. Mайдanак. The finding chart for the binary is shown in Figure 1, taken from Miller and Wachmann's paper. The comparison star BD+55°2706 ($V=9^m21$, $U-B=0^m10$; $B-V=0^m19$; $V-R=0^m08$) and the check one ($V=10^m76$; $U-B=+0^m21$; $B-V=0^m35$; $V-R=0^m33$) are denoted with s and c, respectively.

The probable error of a single observation of the binary was determined to be 0^m029 in U; 0^m017 in B; 0^m019 in V and 0^m017 in R. The numbers of the measured points are 188 in U; 300 in B; 307 in V and 299 in R filters, respectively.

According to Miller and Wachmann's prediction the time of the obtained normal minimum is shifted by $0^d9890 \pm 0^s0003$ and the improved ephemeris for the binary is

$$\text{MinI} = \text{JDH } 2448953.078 + 3^d3061560 \times E \\
\pm 0.001 \pm 0.00000002$$

The derived light curves for U, B, V, R colours are shown in Figure 2. From the Figure, it can be seen that light curves show a considerable brightness scatter, both at and out the minima. The clear-cut secondary minimum is seen only on the R-curve. We suppose that the photometric activity of DN Cep may be understood in term of the early stellar evolution. In this case the binary is to belong to Cep OB1 association. According to our elementary distance estimation the binary can be related to the association. DN Cep is expected to be an exceptionally interesting spectroscopic object.

Finally, the basic characteristics of the light curves are given in Table 1.

Table 1

	V	U-B	B-V	V-R
Max	11.98	-0.14	0.37	0.39
MinI	12.47	-0.11	0.41	0.37
MinII	12.05	-0.16	0.37	0.39

Note, that the amplitude in B colour is 0^m5 whereas the photographic one was near 1^m0 .

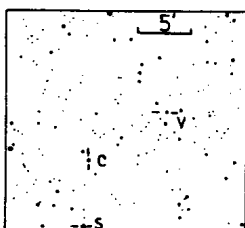


Figure 1. Finding chart for DN Cep.

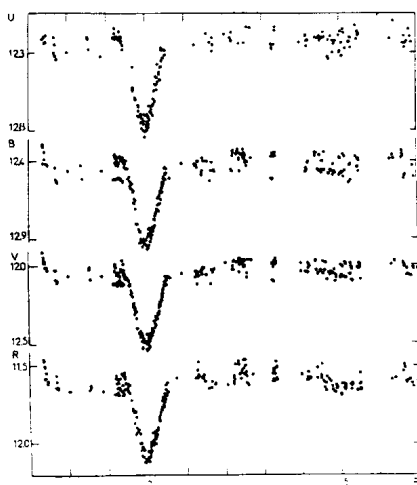


Figure 2. The light curves of DN Cep.

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References:

- Miller W. J., Wachmann A. A.: 1971, *Specola Astronomica Vatican Recherche Astron.*, **8**, No. 12, 211
 Parenago P. P.: 1938, *Peremen. Zvezd.*, **5**, No. 7, 206