COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 2101

Konkoly Observatory
Budapest
1982 March 4

HU ISSN 0374-0676

PHOTOELECTRIC PHOTOMETRY OF THE ECLIPSING BINARY DM PERSEI

DM Per (BD $+55^{\circ}616$ = HD 14871) was disvovered as an Algol type eclipsing binary by Hoffmeister (1943). The first light elements are also given by Hoffmeister (1944). Kukarkin and Ghiz (1949) obtained a new value of the period and a first detailed photoelectric study of the system was made by Colacevich (1950) who pointed out a strange behavior of the light curve at the end of primary minimum where the total light of the system remains nearly constant in between 0.08 and 0.10 phases and then reaches the maximum value gradually. Colacevich deduced the geometric elements and also the absolute dimensions of the system combining his photometric data with the spectroscopic elements obtained by Deutsch (1945). Recently, Scaltriti (1976) obtained a photoelectric light curve in yellow colour. Scaltriti solved his curve with the method of Russell-Merrill and gave the new light elements as,

$$\text{Min I Hel} = 24\ 41920.4543 \pm 6 + 2^{d}.7277427 \pm 8\ .E.$$

He also pointed out that the depth of primary minimum is changing and there exist some distortions in the light curve.

This interesting system was observed photoelectrically at the Ege University Observatory on 18 nights in 1980 and 1981 observational periods, and a total of 741 and 737 individual points were obtained in blue and yellow colours, respectively. The observations were made with the 48 cm Cassegrain telescope equipped with an unrefrigerated EMI 9781 A photomultiplier tube.

BD + 55°590 and BD + 55°587 were used as comparison and check star, respestively. No evidence for the variability of the comparison star was found. All the differential observations (variable minus comparison) were corrected for the differential extinction using the extinction coefficients for each night.

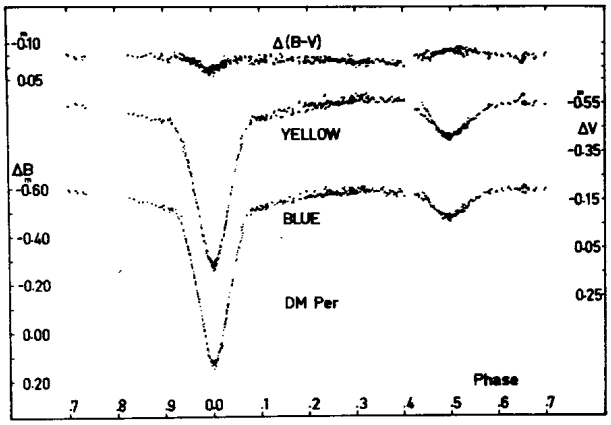

Figure 1

The light and colour curves are presented in Figure 1 where the magnitude differences have been plotted against the phases calculated with the elements given by Scaltriti (1976). The observed minima, the depth variability of primary minimum and a noticeable displacement of mid-secondary had been reported by the author previously (Sezer, 1980). Now it can be seen from the light and colour curves that the system is reddening at the primary minimum while it is bluer at the secondary minimum which is consistent with the spectral types of the components (B5 + A6) given in the literature.

Actually the total light of the system remains nearly constant at the end of the primary minimum and then it reaches the maximum around 0.3 phase which confirms the existence of similar distortions reported in other publications cited above. In addition to the variations at the depth of primary minimum the secondary one also varies from night to night. The analysis is in progress.

This project is partly supported by the Turkish Scientific and Technical Research Council.

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