

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

Number 1741

Konkoly Observatory
Budapest
1980 February 12

B V LIGHT CURVES OF SZ Psc

The RS CVn type eclipsing binary SZ Psc was observed photoelectrically at the Ege University Observatory from July 18 to December 1, 1979. The observations were made in two colours, B and V, with the 48 cm Cassegrain telescope equipped with an unrefrigerated EMI 9781 A photomultiplier.

As comparison star, HD 219150 was used as suggested by Jakate (1979) since the former comparison HD 219018 was reported to be an intrinsic variable by some authors. A total of 108 observations have been obtained in each colour in 14 nights. The phases of each observation were computed by the following light elements

$$\text{Min I} = \text{JD Hel. } 2443894.885 + 3.96525 \cdot E.$$

The differential observations, taken as comparison minus variable, have been corrected for atmospheric extinction. They were plotted against phase and are shown in Figure 1 and 2.

It is clearly seen that the mid-primary is displaced and falls at around the phase 0.05. No observations falling within secondary minimum have been obtained, thus making it difficult to estimate the mid-secondary. However, from the shoulders of secondary minimum it seems that mid-secondary is around the phase 0.52 and is not separated by the half period. This may be the consequence of either an eccentric orbit or a migrating wave as proposed by Hall (1976) for RS CVn-type binaries.

The most distinguished features of the light curves of the eclipsing binary SZ Psc are the asymmetric and unequal maxima.

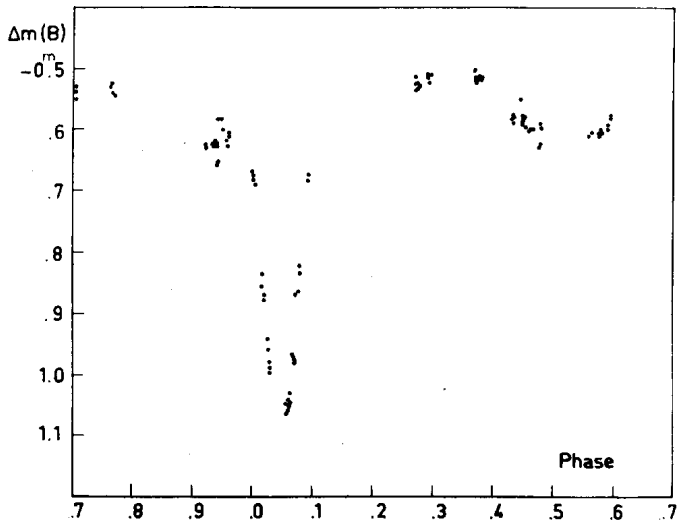


Fig.1. B light curve of Psc

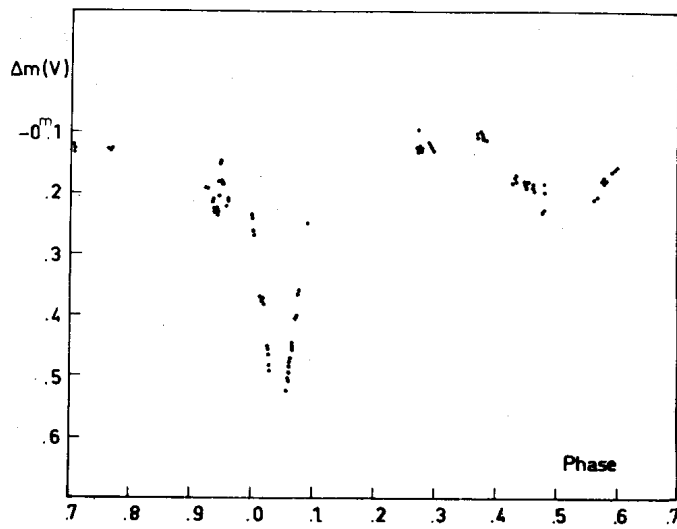


Fig.2. V light curve of SZ Psc

Two possible alternatives may be considered for the light variation of SZ Psc.

i) The comparable light variation outside eclipses and displaced secondary minimum suggest that the system is a semi-detached one with eccentric orbit.

ii) The light variation seen outside eclipses is caused by stellar-spots, and the distortion wave possesses two minima separated by almost half a period.

However, the preliminary solution given by Weiler (1977) shows that neither component fills its Roche lobe. Thus, it may seem that the possibility of a semi-detached system is ruled out. The second alternative to explain the light variations outside eclipses by stellar-spots leads to a conclusion that two minima in the distortion wave are either caused by two groups of spots on one component separated by nearly 180 degrees in longitude or two spots suitably located on both components.

In order to clarify the problem, more observations in future are greatly desired.

This study is a part of research project No. 375 supported by the Scientific and Technical Research Council of Turkey.

O. TÜMER, M. KURUTAÇ, Z. TUNCA,
S. EVREN, A.Y. ERTAN, C. İBANOĞLU
Ege University Observatory
Bornova-İzmir, Turkey

References :

- Hall, D.S. 1976, I.A.U. Comm. 42, Circ. 2
Jakate, S.M., 1977, I.B.V.S. No. 1578
Weiler, E.J., 1977, Mon.Not.R. astr. Soc. 182, 88