

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

Number 3487

Konkoly Observatory
Budapest
29 June 1990
HU ISSN 0374 - 0676

THE DISAPPEARANCE OF MINIMA OF ECLIPSING BINARY SS Lac IN
OPEN CLUSTER NGC 7209

The eclipsing binary SS Lac = BD+45^o3782(9.4) = 125.1907 is situated in open cluster NGC 7209. The variability of the star was found by Hoffmeister (1921), more exact light elements are given by Dugan and Wright (1935):

$$\text{Min I} = 2415900.76 + 14^{\text{d}}.41629 \cdot E$$

The change of brightness of the variable happens in the interval 10.28 - 10.69 m(pg) with identical minima. The orbit of the system is eccentric, $e = 0.11$. All observations were made photographically and visually. The photometric parameters were derived from the photographic light curve by Dugan and Wright (1935).

UBVR photoelectric observations were carried out during 1984-89 on Mt. Maidanak in the Uzbek SSR. Stars N1 and N3 from Hoag et al.'s (1961) catalogue were used as standard stars. We have got 192 measurements of the binary. The probable error of a single observation in V is 0.^m012, for U-B: 0.^m017, for B-V: 0.^m012, for V-R: 0.^m020. The light curve of SS Lac based on the above elements is shown in Figure 1. It shows full absence of the expected brightness weakening in both minima. For comparison the photographic light curve of SS Lac is given in the lowest part of the Figure. The survey of all observations of the star showed, that the minima were persistently observed in 1890-1950. We have concluded that the minima of the binary began to disappear in about 1952. The most probable reason of the disappearance of the minima can be a sudden change in the orbital plane inclination or, less probably, the disintegration of the binary. Both may be caused by the passage of a cluster member star near SS Lac. But this is not at all certain, only a tantalizing possibility.

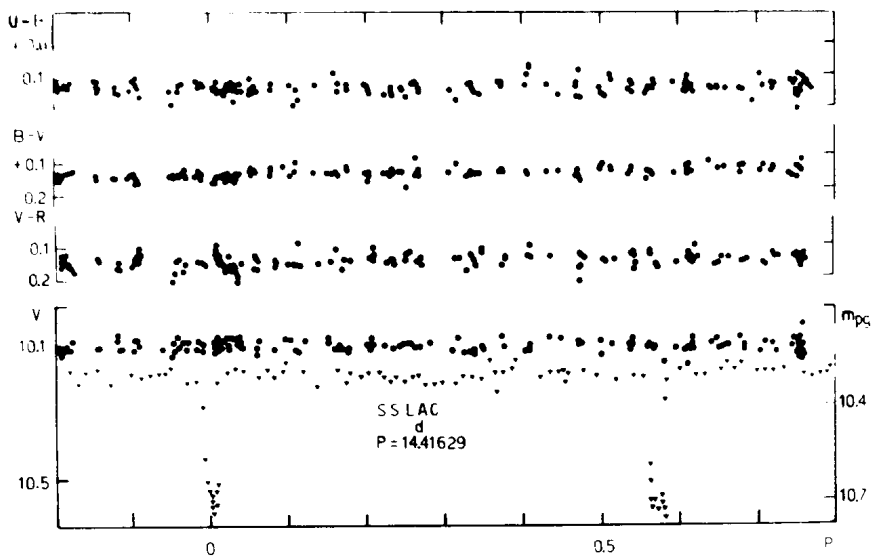


Figure 1.

MAMNUN M. ZAKIROV

and

ALIBEK A. AZIMOV

Astronomical Institute of the Uzbek Academy
of Science

References:

- Dugan, R.S., and Wright, F.W.: 1935, *AJ*, 44, 150.
 Hoag, A.A., Johnson, H.L., Iriarte, B., Mitchell, R.L., Hallam, K.L.,
 Sharpless, S.: 1961, *Naval Obs. Publ.*, XVII, part VII, 349.
 Hoffmeister, C.: 1921, *AN*, 214, No.5113, S1.