

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

Number 1934

Konkoly Observatory  
Budapest  
1981 March 11

HU ISSN 0374-0676

PHOTOMETRIC OBSERVATIONS OF THE SHORT PERIOD W UMa SYSTEM

BM UMa

BM UMa has been discovered as a variable star by Hoffmeister (1963) and classified as "short period". Meinunger and Wenzel (1968) classified it as RRc star with a period of  $0^d.136$ . Shugarov (1975), however, found that BM UMa is an eclipsing binary of W UMa type.

The star has been observed photoelectrically in B and V with the double beam photometer at the 1.06m telescope of Hoher List Observatory on February 22, 1980. Comparison star has been an 11th magnitude (V) star with the approximate coordinates (1950)  $11^h 09^m.2$ ,  $+46^o 43'$ . Minima times have been obtained:

Min. I JD hel. 2444292.3496

Min. II JD hel. 2444292.4853

The period given by Shugarov was not precise enough to link the new minima with his minimum epoch. By adding  $0^d.068$  also the maxima determined by Meinunger and Wenzel have been used to derive the new elements:

Min. I = JD hel.  $2437348.558 + 0^d.2712207E$

They satisfy all cited extrema.

Figs. 1 and 2 show the light curves in both colours.

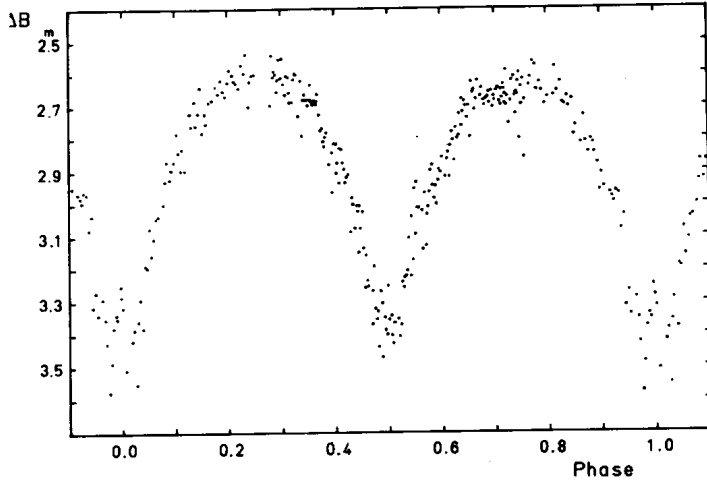


Fig. 1 B light curve of BM UMa

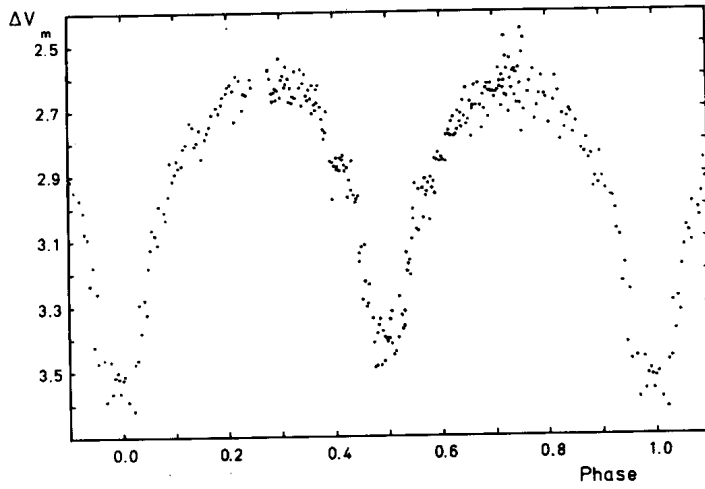


Fig. 2 V light curve of BM UMa

The formation of normal points and a preliminary rectification lead to the conclusion that the eclipses are complete. Although the maxima differ somewhat in brightness, major asymmetries of the light curve seem to be lacking. By the large photometric errors of this 14th (V) magnitude object it could only be estimated (on the basis of the Russell - Merrill method and the Anderson and Shu (1979) theoretical light curve atlas) that the ratio of the radii is of the order of 0.8 to 0.9 and the orbital inclination is about  $85^\circ$ . The broad maxima resemble light curves with a fill-out  $f \approx 0.5$ .

It should be checked if the well observed photographic light curve by Meinunger and Wenzel, which led to the classification "RR Lyrae star", is an indication for a variable asymmetry in the light curve of BM UMa.

M. HOFFMANN

Observatorium Hoher List  
5568 Daun / Eifel, BRD

References:

- Anderson, L., and Shu, F. H., 1979, *Astrophys. J. Suppl. Ser.* 40, 667  
 Hoffmeister, C., 1963, *Astron. Nachr.* 287, 169  
 Meinunger, L., and Wenzel, W., 1968, *Veröff. Sternw. Sonneberg* 7, Heft 4, 389  
 Shugarov, S. Yu., 1975, *Astron. Zirk.* 888, 7