

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

Number 1976

Konkoly Observatory  
Budapest  
1981 June 19

HU ISSN 0374-0676

PHOTOMETRIC OBSERVATIONS OF V523 Cas

V523 Cas is an eclipsing binary of W UMa type with one of the shortest known periods ( $0^d.2337$ ). Discovered by Weber (1957), photoelectric observations and analyses have been given by Lavrov and Zhukov (1975, 1976) and Bradstreet (1981).

In November 1979, V523 Cas has been observed during four nights with the 1.06m telescope of Hoher List Observatory and its double beam photometer. The light curves in B and V are shown in Figs. 1 and 2. An independent analysis of these data has been carried out, but as the results generally agree well with those obtained by Bradstreet, only a few remarks seem to be necessary.

Minima times have been determined:

JD hel. 2444191.3291	Min. II
2444194.4828	Min. I
2444195.5363	Min. II
2444200.3262	Min. I

A combination of the minima times determined by Lavrov and Zhukov (1976), Busch (1974), Bradstreet (1981) and those listed above indicate an increase of the period to  $0^d.2336908$  since JD 2441300.

At the maxima and at primary minimum small night to night brightness changes have been noticed, but they had no detectable effect on the light curve analysis. It is interesting to note that an analysis of the data by means of the Russell-Merrill method reproduced essentially the elements found by Lavrov and Zhukov. So the light curve is apparently quite stable. Because of the well known shortcomings of this method, applied to W UMa binaries, their findings have to be translated to the contact model, however. Somewhat critical seems to be the question if V523 Cas has com-

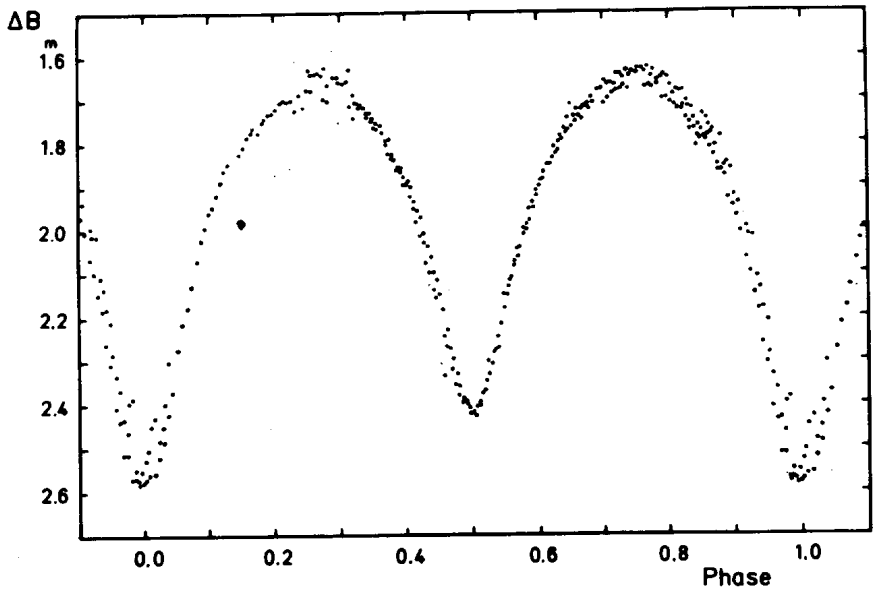


Fig. 1 B light curve of V523 Cas relative to BD+49°151

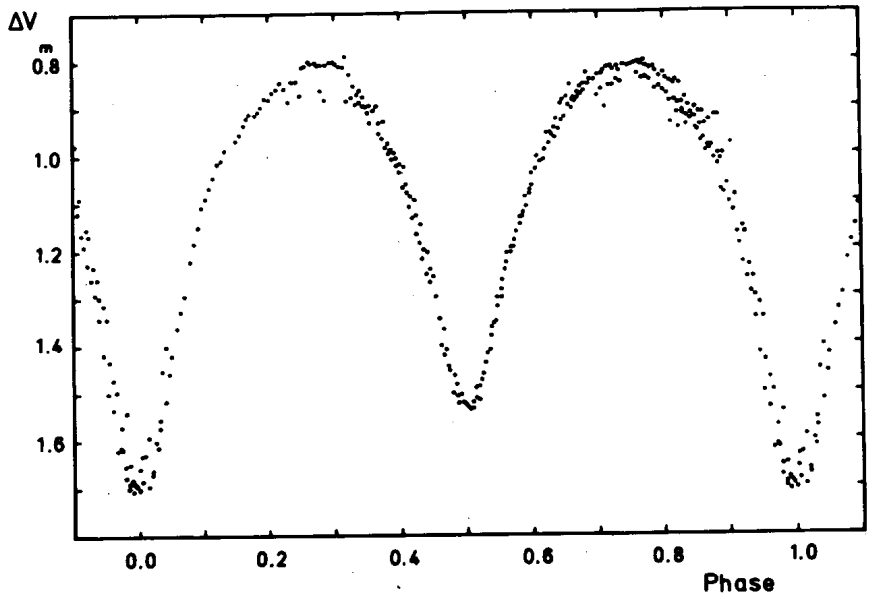


Fig. 2 V light curve of V523 Cas

plete or partial eclipses. There is a rivalry of the results by the Russell-Merrill type analysis which yields only a definite complete eclipse solution (and - even more important - of the data in fig. 4 in the paper by Lavrov and Zhukov (1976) which shows a flat bottom of the primary minimum) versus the theoretical light curve solution by Bradstreet, who obtained incomplete eclipses. The observations reported here do not show a constant part in the occultation minimum, but the eclipses are probably almost tangential.

V523 Cas exhibits two minor complications which are very similar to respective ones in CC Comae (Rucinski, 1976).  
 1) The second maximum is slightly brighter than the first maximum: the  $B_1$  rectification coefficient in the classical second order Fourier expansion of maximum light is  $-0.0072$ . For longer period W type systems usually a slight brightness excess of the maximum following the occultation can be found.  
 2) The colour at min. II becomes redder than expected.  
 It is suggested that the present assumptions on the brightness and temperature distributions on the components are not quite sufficient yet to explain these phenomena in the closest contact binaries.

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