

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

Number 3568

Konkoly Observatory
Budapest
1 March 1991
HU ISSN 0374 - 0676

Nature of the variability of VV Scl

HD 7676 is an Ap star, the spectral type of which is A5 SrCrEu (Renson *et al.* 1991). Its light variability found by Cousins and Stoy (1962) has been studied by Strohmeier (1965), who derived a period of 2.47962 days, with a double-wave variation curve considered to be due to eclipses. Accordingly HD 7676 received the variable-star name VV Scl.

But we believe that it is unduly classified as an eclipsing variable.

With a period as large as 2.48 days, an A5 eclipsing star would most probably be of the Algol type. But the figure on the fifth page of Strohmeier's paper shows that the maxima of VV Scl are not flat at all, and that the variation is smooth and continuous, the minima being not deep. The latter are only somewhat sharper than the maxima.

The error of the measurements is not quoted, but from the dispersion of the points it can be inferred that it is relatively large. It is even not quite sure that the variation is double-waved; it may be that the real period is only 1.24 day instead of 2.48. According to Strohmeier's figure, the B values at the primary and the secondary minima are perhaps 8.73 and about 8.70 respectively, while at the maxima they are about 8.56 and 8.59. Thus the difference between the minima is not larger than the difference between the maxima, and it remains within the limits of the errors.

Even if the double wave is real, it remains most probable that the variations of VV Scl are of the α CVn type and not due to eclipses, since many Ap stars exhibit double-wave variations.

The main argument against the hypothesis of an eclipsing or an ellipsoidal variable lies in the fact that V does not vary similarly to B . According to the table in Strohmeier's paper, V remains almost constant within the limits of error. The mean value is 8.39, and the extreme values in that table are 8.35 and 8.43. Such differences for the behaviour in various colours are typical of Ap-star variations.

If VV Scl were an eclipsing variable, the observed variation should be considered as being small, implying very partial eclipses. On the contrary the range in B is very large if the variation is only of the α CVn type. The difference between the values quoted above for the higher maximum and the lower minimum in B is 0.17. This range is among the largest known for Ap stars. Thus it would be very interesting to have accurate measurements of this star in the Strömgren system for instance. Moreover it is to be hoped that they will enable to confirm that the variations do

not originate from eclipses. Such measures are now already planned at the European Southern Observatory (ESO).

P. RENSON
Institut d'Astrophysique
Université de Liège
Avenue de Cointe, 5
B-4000 Liège (Belgium)

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