

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1690

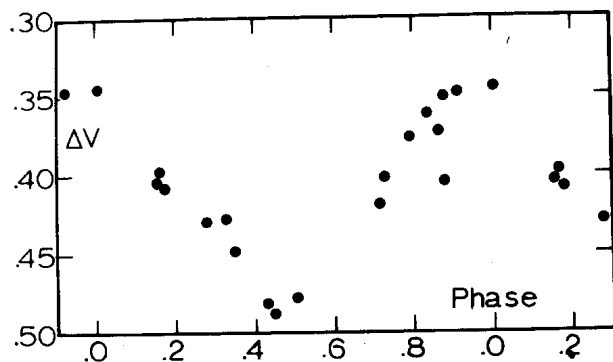
Konkoly Observatory
Budapest
1979 October 17

CONFIRMATION OF SUSPECTED VARIABILITY IN HD 86590

Our attention was drawn to HD 86590 by Bolton (1978ab), who pointed out that it is a short-period SB1 and that its light curve might show an RS CVn-type (= BY Dra-type) photometric wave and possibly also an eclipse. Therefore we obtained differential photoelectric photometry at two observatories in early 1979.

There are published accounts of some earlier photoelectric photometry. Table VII of Eggen (1964) gives $V_E = 7.^m75$, $B-V = +0.^m88$, and $U-B = +0.^m43$. Eggen (1978) explains that his February and May 1963 observations showed a range of $0.^m08$ in V , that two observations in March 1978 gave $V = 7.^m75$, and that the "visual magnitude" was $7.^m90$ on 2 April 1978. Table II of Argue (1966), however, gives very different magnitudes and color indices: $V = 8.^m45$, $B-V = +1.^m02$, and $U-B = +0.^m76$.

At Dyer Observatory the 24-inch (60 cm) reflector was used to obtain 34 two-color (BV) observations on 11 nights between JD 2,443,944.7 and 2,440,002.7; details are given by Vaucher (1979). At the other observatory the 11-inch (28 cm) reflector was used to obtain 18 one-color (V) observations on 6 nights between JD 2,443,951.7 and 2,443,987.7. Nightly means are plotted in the Figure versus



the spectroscopically determined orbital period of $P = 1.^d0703544$ of Bolton (1978ab).

The magnitudes ΔV are differential with respect to the comparison star HD 86857 and have been corrected for atmospheric extinction and transformed to the UBV system. The rms deviation of 16 differential observations of the check star HD 86818 with respect to our comparison star on 8 nights was only $\pm 0.^m007$.

HD 86590 is clearly variable. The light curve is nearly sinusoidal, with a full amplitude of $0.^m14$ in V. Such an amplitude is nicely consistent with the $0.^m15$ range indicated by Eggen's observations in 1978, assuming they were made on the same photometric system, i.e., both V or both V_E . It would be interesting to see if the 1963 observations of Eggen, which showed a range of $0.^m08$, give a light curve similar to ours when plotted with respect to the same orbital period. Zero phase in our figure is arbitrary, but an epoch of minimum light is JD 2,443,969.85.

The one errant point at $\Delta V = 0.^m40$ around phase $0.^P875$ made us at least consider the possibility of an eclipse but, even though there was no reason at all to suspect the accuracy of that point (which is a mean of three individual observations, each one bracketed by two comparison star measures), we are very reluctant to conclude we have observed an eclipse which, if real, must have been very shallow and extremely brief. Nevertheless, the question of eclipses remains

open because there are larger unobserved phase intervals in which an eclipse could be hiding.

We are continuing photometry of this interesting binary, to search for possible eclipses and to establish how closely the photometric period coincides with the orbital period.

Our appreciation goes to Dr. C. T. Bolton for the help he provided by private correspondence.

DOUGLAS S. HALL
CHRISTOPHER A. VAUCHER
Dyer Observatory
Vanderbilt University
Nashville, Tennessee 37235

HOWARD LOUTH
Louth Observatory
2199 Hathaway Road
Sedro Woolley, Washington 98284

References:

- Argue, A. N. 1966, M.N.R.A.S. 133, 475.
Bolton, C. T. 1978a, private communication on 4 April 1978.
Bolton, C. T. 1978b, I.A.U. Commission 42 Working Group on RS CVn
Binaries, Circular No. 10.
Eggen, O. J. 1964, A.J. 69, 570.
Eggen, O. J. 1978, I.A.U. Commission 27, Inf. Bull. Var. Stars, No. 1426.
Vaucher, C. A. 1979, Master's Thesis, Vanderbilt University, Nashville, Tennessee.