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HR 3337 : A BRIGHT NEW ECLIPSING BINARY

UBV photometry obtained during the first quarter of 1984 with the 10 - inch automatic photoelectric telescope at Fairborn Observatory West in Phoenix, Arizona shows that HR 3337 is probably an eclipsing binary.

HR 3337 is the visual binary ADS 6828. According to Batten, Fletcher, and Mann (1978) one component is an SB1, with P(orb.) = $5^{d}.9766$; the other component is another SB1, with P(orb.) = $2^{d}.49955$. Because the separation between components A and B is only 0.4 arcseconds, our photometry included both (as well as component C, 18 arcseconds away) in the diaphragm. According to the Yale Bright Star Catalogue, components A and B differ in brightness by only $0^{m}.1$, the composite magnitude is V = $6^{m}.39$, and the composite spectral type is A5m.

We suspected variability because Grønbech and Olsen (1976) concluded it might be "variable in V," on the basis of the scatter in three separate photoelectric measures. HR 3337 was included in the list of 20 suspected variable stars published by Hall (1983).

Our photometry is described in detail by Boyd, Genet, and Hall (1984) and the data have been sent to the I.A.U. Commission 27 Archive for Unpublished Observations of Variable Stars (Breger 1982), where they are available as file no. 136. Our comparison star was HD 71297.

When our differential magnitudes were plotted with respect to phase computed with the ephemeris

$$JD(hel.) = 2442884.158 + 2^{d}.49955\ n$$

given by Batten, Fletcher, and Mann (1978), where the initial epoch is a time of periastron, there was evidence of a shallow eclipse around phase $0^{P}.48$. This phase corresponds to a time of conjunction (the spectroscopic primary component in front) to within about $0^{P}.05$, which is approximately the uncertainty to be expected in extrapolating forward to the epoch of our observations.

Figure 1 is a plot of all data in the phase interval between $0^P.4$ and $0^P.5$. The arrow indicates the mean level of brightness as defined by all the other (non eclipse) points. The eclipse we see is approximately $0^m.06$ deep in all

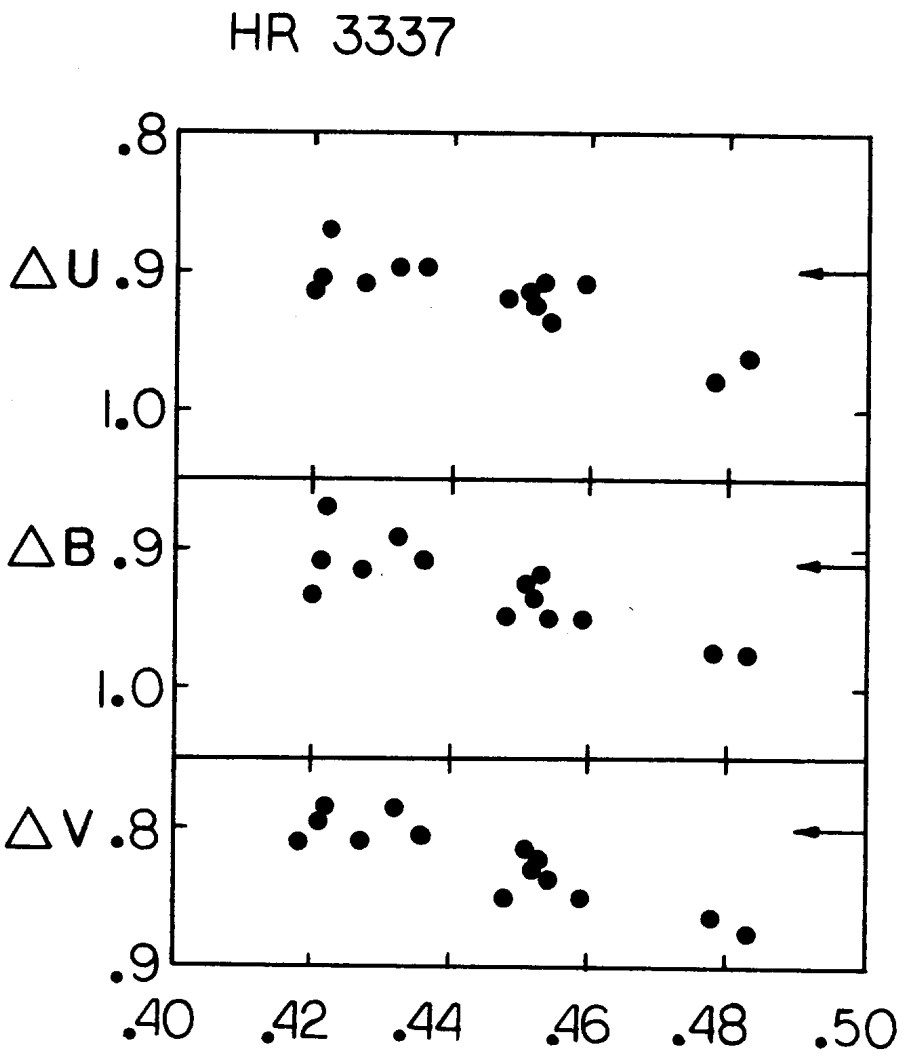

Figure 1

The arrows indicate the mean level outside eclipse. The points below define the shallow secondary eclipse we have discovered.

three bandpasses, but it could be deeper if the lowest points do not define the bottom. We obtained no data in the corresponding phase interval a half cycle away, where the other eclipse should fall. Fekel (1978) states that the secondary star is "late F." Therefore the eclipse we have observed, when the (earlier) primary star was in front, must be the secondary eclipse.

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