HD 1833: A NEW VARIABLE STAR

Because Bidelman and MacConnell (1973) reported Ca II H and K emission,
we suspected HD 1833 might be an RS CVn binary and therefore might show the
photometric wave characteristic of most stars of that type. According to
their table VII, $m_V = 8\overset{m}{.}2$ and the spectral type is K1 III + F.

Henry, observing with the No. 4 16-inch Cassegrain at Kitt Peak, ob-
tained data on 6 nights between JD 2444506.8 and 2444513.8. Observing with
the 24-inch Cassegrain at Dyer he obtained data on 7 nights between JD
2444526.8 and 2444605.5. Lines, observing with his 20-inch Cassegrain, ob-
tained data on 25 nights between JD 2444845.9 and 2444928.7. Henry and
Sherlin, observing with the 48-inch Newtonian at Cloudcroft, obtained data
on 11 nights between JD 2444872.7 and 2445160.9. All observations were made
in V with HD 1680 as the comparison star. The individual differential mag-
nitudes, corrected for differential extinction and transformed differentially
to V of the UBV system, have been sent to the I.A.U. Commission 27 Archive
for Unpublished Observations of Variable Stars (Breger 1979), where they are
available as file no. 106.

Examination of our data showed immediately that HD 1833 is variable,
with an amplitude of $\Delta V = 0\overset{m}{.}10$. A period-finding program, based on an ap-
proach similar to that of Lafler and Kinman (1965), yielded $34\overset{d}{.}36$ as the
best period, with $34\overset{d}{.}46$ as another possibility almost as good. The figure
below is a plot of the nightly means, where ΔV is in the sense variable minus
comparison. Phase is computed with the ephemeris

$$JD = 2444949.5 + 34\overset{d}{.}46 \, n,$$

where the initial epoch is an approximate time of minimum light. The first
two groups of data (from late 1980) are in the upper half, with triangles
for Kitt Peak and circles for Dyer. The last two groups (from late 1981 and
early 1982) are in the bottom half, with crosses for Lines and plusses for
Cloudcroft. Comparing the two plots we see the light curve has undergone
some change. Neither light curve is a good sinusoid, but the shapes are
difficult to describe in a simple way.

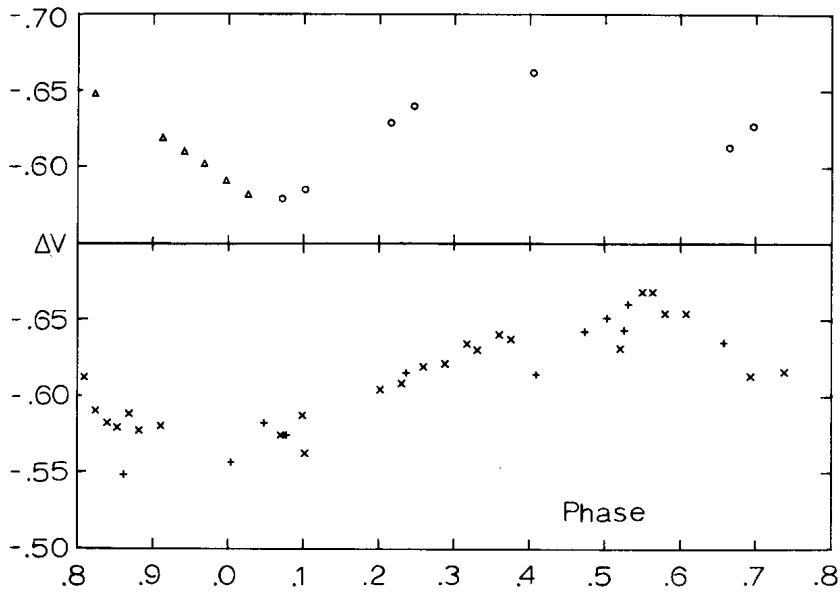We have been in communication with Luis Balona and T. Lloyd Evans of

Figure 1

the South African Astronomical Observatory, who tell us they have been ob-
taining spectroscopic and photometric observations of this star (and all
of the stars in table VII of Bidelman and MacConnell). If radial velocity
measures indicate HD 1833 is a binary system with an orbital period around
36 days, then it would be a long-period RS CVn binary by the definition of
Hall (1976).

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