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HD 26337: A NEW RS CVn VARIABLE STAR

According to Bidelman and MacConnell (1973) HD 26337 (= SAO 130994) is a G5 IV star with Ca II H & K in emission. This made us suspect it was an RS CVn binary and (as most members of that class are) variable in light as well.

As part of a program to obtain spectroscopic observations of the Ca II H & K emission stars listed by Bidelman and MacConnell (1973) Fekel observed HD 26337 with the 91-cm reflector at Goddard Space Flight Center and with the 2.7-m and 2.1-m reflectors at McDonald Observatory of the University of Texas. The 5 Goddard observations with a dispersion of  $40 \text{ \AA/mm}$  and a resolution of  $2.5 \text{ \AA}$  showed moderate strength Ca II H & K emission lines. On 8 nights between JD 2444179.9 and 2444627.6 red spectrograms were obtained at McDonald with dispersions of  $4.4 \text{ \AA/mm}$  or  $9 \text{ \AA/mm}$ . A preliminary orbital element solution with 10 radial velocities, 8 from McDonald and 2 from other observatories, indicates an orbital period of  $2.04414 \pm 0.00047$  and a velocity amplitude of about 50 km/sec. The observations show only one component, whose lines are substantially broadened by rotation with  $V \sin i \sim 40\text{-}45$  km/sec. The  $H\alpha$  line appears to be a relatively weak absorption feature. Spectroscopic observations are being continued to improve the orbital elements.

Differential photoelectric measurements were made at four different observatories on a total of 27 different nights between JD 2444287.55 and 2444660.60. Landis observed with the 8-inch reflector of Landis Observatory in Locust Grove, Georgia; Henry observed with the 24-inch Seyfert reflector at Dyer Observatory and the No. 4 16-inch reflector at Kitt Peak National Observatory; Renner observed with the 10-inch reflector at Scuppernong Observatory near Dousman, Wisconsin. All observed with filters chosen to match V of the UBV system, although Henry obtained also a few observations at Kitt Peak with a filter selected to match B. All used 37 Eridani as the comparison star. The individual differential magnitudes, corrected for differential at-

atmospheric extinction with mean coefficients appropriate for each observatory and transformed to the UBV system with coefficients determined previously, have been deposited in the I.A.U. Commission 27 Archive for Unpublished Observations of Variable Stars (Breger 1979), where they are available as file

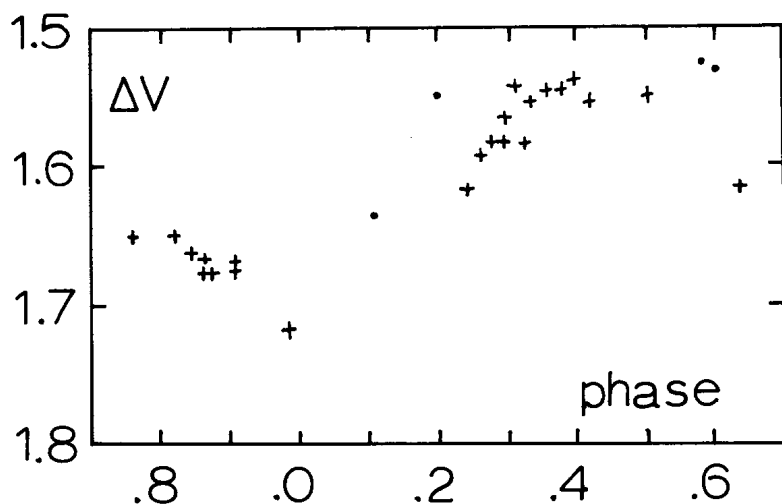


Figure 1

no. 95. In the reductions we used a mean color difference of  $\Delta(B-V) = -0.^m27$ , in the sense variable minus comparison.

Our photometry is best fit by a period close to but very slightly shorter than the orbital period. The light curve in V is plotted in the figure below, with a period of  $2.^d038$ . Each point is a mean of the two or three individual magnitudes obtained on each night. The total range is  $\Delta V = 0.^m19$ , but the shape seems to be somewhat variable from one year to the next. The four observations of Landis (dots), from the 1979-80 season, do not fit very well the other observations (crosses), all from the 1980-81 season. A recent epoch of minimum light would be JD 2444635.65, which corresponds to zero phase in the figure.

For our comparison star 37 Eri, Nicolet (1978) gives  $V = 5.^m44$  and  $B-V = 0.^m94$ . Our light curve then indicates that HD 26337 varies over the range  $6.^m95 < V < 7.^m15$ . The color index, probably constant, is around  $B-V = 0.^m67$ .

It is characteristic of most RS CVn binaries that the light is variable and that the photometric period is very close to but slightly shorter than the orbital period. Such is the case with this newly discovered

RS CVn binary HD 26337, for which  $P(\text{phtm.})$  is shorter than  $P(\text{orb.})$  by about 0.3%.

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