REQUEST FOR VRI PHOTOMETRY OF THE RS CVn TYPE BINARY
HD 26337 DURING 15 THROUGH 30 DECEMBER 1987

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Observers at all geographic longitudes in the northern and southern hemispheres are begged to obtain VRI photometry of EI Eri = HD 26337, a relatively bright (V = 6.9 mag) spotted RS CVn-type binary with a 1.94-day period. For more specific information on this interesting star see Table 1 and Fekel et al. (1987) and Hall et al. (1987); a V-light curve can be found in the last of these three references.

We are going to apply the Doppler Imaging technique (Vogt and Penrod 1983) to this star during a 10-day run at Kitt Peak National Observatory covering 18-23 and 26-29 December 1987 and we need a simultaneously observed light curve in order to (i) obtain an independent spot-model solution from the photometric data to test and compare with the solution we derive from Doppler Imaging, (ii)

Figure 1. Finding chart for the stars in Table 1.
Table 1

Observational properties

Var. star: HD 26337 = BD-8°801
\[ \alpha = 04^h 07^m 15^s, \delta = -08^\circ 01' 27'' \ (1950.0) \]
\[ m_V(\text{max}) = 6.9 \text{ mag, amplitude in } V \sim 0.20 \text{ mag} \]
spectral type G5 IV
photometric period 1.945 days
orbital period 1.94722 days

Comp. star: 37 Eri = HD 26409 = BD-7°758
\[ \alpha = 04^h 07^m 56^s, \delta = -07^\circ 03' 12'' \ (1950.0) \]
\[ m_V = 5.6 \text{ mag, spectral type G5} \]

Check star: BD-9°843
\[ \alpha = 04^h 09^m 32^s, \delta = -08^\circ 57' 55'' \ (1950.0) \]
\[ m_V = 6.6 \text{ mag, spectral type G5} \]

Standard stars: Please chose from The Astronomical Almanac for standards on the Johnson system, or from Fernie (1983), and references therein, if you observe in the Kron-Cousins system.

derive the temperature of the spotted region from the V-I color curve, and (iii) combine both solutions to yield a more accurate and unique spot map of HD 26337. If successful, this would be the first time that a spot model is applied to both light and color curves and high-resolution line profiles observed at the same time. We hope this will also demonstrate more quantitatively to what extent older spot-model solutions derived from photometry alone were affected by the non-uniqueness problem.

What do we need? Several things should be considered by a photometrist who might wish to observe HD 26337. The photometry should be done either in the Johnson VRI or in the Kron-Cousins VRI standard system. Observers with a solid-state photometer (e.g., the SSP-3 from Optec, Inc.) are especially encouraged to participate, because their R-I filters are designed to match the standard Johnson system. Please determine your own transformation coefficients, so that magnitudes on your instrumental system can be transformed to one of the above-mentioned standard systems; follow procedures outlined in Hall (1983), Hall and Genet (1982), or Sanders and Persha (1983). Another important point is that the observations should be carried out throughout the better part of the whole night. HD 26337 has a photometric (and orbital) period of very nearly exactly 2.0 days, which makes it very difficult to
obtain full phase coverage. Moreover, the spot behavior is changing so fast (Hall et al. 1987) that no more than 5 or 10 rotation cycles can be combined. These requirements can be fulfilled only if several observers at different geographic longitudes are observing simultaneously. Therefore, our request goes especially to observers in Europe, Africa, Asia, Australia, and the Pacific, but also to observers in the United States. Well equipped amateur astronomers are especially welcomed and invited to participate in this campaign. If you can use only V on your photometer, please go ahead, because these observations would be very valuable too.

If you decide to help us and want to observe HD 26337, please use the comparison and check star listed in Table 1 and identified in the finding chart in Figure 1.

We plan to publish the photometric results separately in a scientific paper, with all of the contributors as authors. Please feel free to write me for more information, at the address above.

REFERENCES


