

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

Number 3049

Konkoly Observatory
Budapest
16 July 1987
HU ISSN 0374-0676

**Request for VRI photometry of the RS CVn type binary
HD 26337 during 15. through 30. December 1987**

Observers in the northern and southern hemisphere at *all geographic longitudes* are begged to obtain VRI photometry of HD 26337, a relatively bright ($V_{max} = 6.9$ 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 latter reference.

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 from 18. - 23. and 26. - 29. December 1987 and we need simultaneous observed lightcurves in order to (i) obtain an independent spot-model solution from the photometric data to prove and compare it with the solution derived from Doppler Imaging, (ii) derive the spot temperature from the V-I color curve and (iii) combine both solutions to 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 which extend 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 also encouraged to participate, their RI-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 the outlinings in Hall (1983), Hall and Genet (1982) or Sanders and Persha (1983). Another important point is that the observations should be carried out through the whole night (or so). HD 26337 has a photometric (and orbital) period of nearly 2.0 days, that makes it very difficult to obtain good

Table 1
Observational properties

Var. star: HD 26337 = BD-8°801
 $\alpha=04^h07^m15^s$, $\delta=-08^\circ01'27''$ (1950.0)
 $m_V(\max)=6.9$ mag, amplitude in V ~ 0.20 mag
spectral type G5 IV
photometric period 1.945 days
orbital period 1.94722 days

Comp. star: 37 Eri = HD 26409 = BD-7°758
 $\alpha=04^h07^m56^s$, $\delta=-07^\circ03'12''$ (1950.0)
 $m_V=5.6$ mag, spectral type G5

Check star: BD-9°843
 $\alpha=04^h09^m32^s$, $\delta=-08^\circ57'55''$ (1950.0)
 $m_V=6.6$ 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.

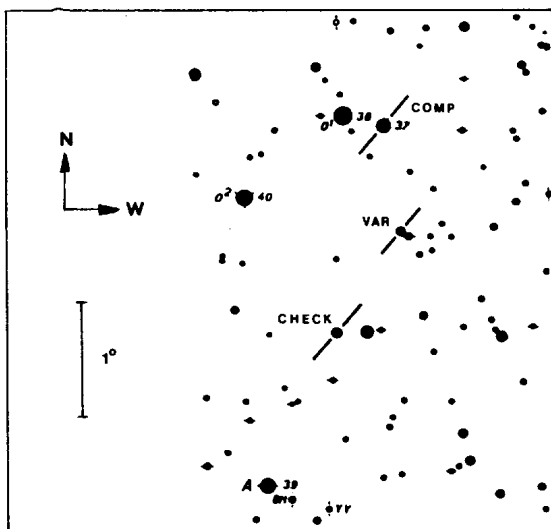


Fig.: 1 Finding chart for the stars in Table 1

phase coverage. Moreover, the spot behavior is changing so fast (see Hall *et al.* 1987) that no more than $\approx 5 - 10$ rotation cycles should be combined. These requirements can be only fulfilled if several observers at *different* geographic longitudes are observing simultaneously. Therefore, our request goes especially to observers in Europe, Africa, Asia, Australia and in the Pacific, but also to observers in the United States. Well equipped *amateur-astronomers* are especially welcome and are also invited to participate in this campaign. If you can use only V on your photometer, please go ahead, these observations would be very valuable too. Finally, we plan to publish the photometric results in a separate I.B.V.S. and/or I.A.P.P.P. paper with all contributors as authors. 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 accompanying finding chart.

Please feel free to write for more information to me or Doug Hall at Dyer Observatory.

KLAUS G. STRASSMEIER
 Dyer Observatory
 Vanderbilt University
 Nashville, TN 37235
 U.S.A.

References

- Fekel, F. C. et al.: 1987, *Astron. J.* submitted.
 Fernie, J. D.: 1983, *Publ. Astron. Soc. Pacific*, **95**, 782.
 Hall, D. S.: 1983, in *IR & Solid-State Photometry, I.A.P.P.P. Commun.*, **14**, p.14.
 Hall, D. S., and Genet, R. M.: 1982, *Photoelectric Photometry of Variable Stars - A practical Guide For The Smaller Observatory*, ed. D.S.Hall and R.M.Genet (Dayton: Minuteman Press).
 Hall, D. S. et al.: 1987, *Astron. J.* submitted.
 Sanders, W. H., and Persha, G.: 1983, in *IR & Solid-State Photometry, I.A.P.P.P. Commun.*, **14**, p.19.
 Vogt, S. S., and Penrod, G. D.: 1983, *Publ. Astron. Soc. Pacific*, **95**, 565.