COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1342

Konkoly Observatory
Budapest
1977 September 26

HD 5303 : A NEW SOUTHERN RS CANUM VENATICORUM BINARY

The southern star HD5303 (BV 625), $\alpha = 00^h51^m21^s$ and $\delta = -74^o56'$ (1950), has been observed spectrographically on the Boller and Chivens 61cm telescope at Mt.John Observatory, Lake Tekapo, N.Z. These observations were part of the joint program of the University of Canterbury and Florida to systematically study RS CVn binaries in the southern hemisphere. Seventeen spectra were obtained with a plate factor of 60Å/mm in the blue and UV spectral region during the period 1976 Sept 01 until 1977 Aug 23. The star is listed as a late-type southern H and K emission line object in the objective prism survey of Bidelman and MacConnell (1973). It is also noted as having H and K emission by Houk and Cowley (1975), who classify the spectrum as G2/5V+F0. HD5303 is given as a Bamberg variable star (BV 625) of unspecified type with amplitude $A_{pg} = 0^m.3$, (Strohmeier et al., 1965).

The spectra confirmed the strong H and K emission nature of HD5303. Large velocity shifts of these emission lines relative to the H and K absorption were clearly evident. Tracings of the spectra on the Joyce-Loebl microdensitometer at the University of Canterbury showed no apparent variation in the emission intensity.

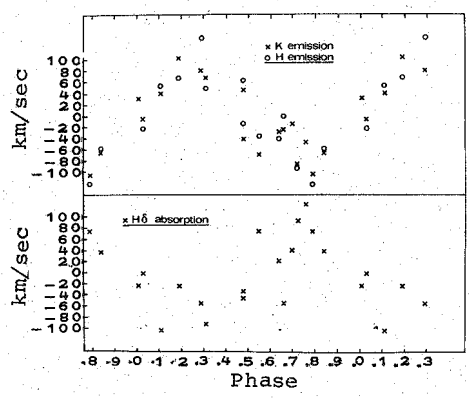
The spectra were measured on the Gaertner linear comparator at Canterbury so as to obtain the radial velocity changes of the emission lines and of selected absorption lines relative to the comparison spectrum.

The spectra were analysed using the period analysis program of C.J. McInally based on the Fourier method of Gray and Desikachary (1973). The data were found to be most compatible with a period of P=1.840 days. Preliminary velocity curves for the H and K emission and for the Hδ absorption are shown. The zero

points of the velocity axes are arbitrary. The phases were computed relative to phase 0.0 at JD 2443022.716 using the period given above.

From the Michigan spectral classification, the Hδ absorption must come predominantly from the F star, while the K emission is clearly due to the G component alone. The peak-to-peak velocity amplitudes of these two components were both about 130km/s, and hence the mass ratio is approximately unity.

HD5303 complies with the definition of RS CVn stars suggested by Hall (1975). In addition, the mass ratio found is typical of this category of star. Photoelectric photometry is being carried out to determine whether the light variations characteristic of many RS CVn stars are present in this system.



J.B. HEARNSHAW,
Dept. of Physics,
University of Canterbury
Christchurch, N.Z.

J.P. OLIVER,
Dept. of Physics and
Astronomy, University of
Florida, Gainesville,
Florida, U.S.A.

References:

Bidelman, W.P. and MacConnell,D.J. 1973, Astron.J. 78, 687

Gray, D.F. and Desikachary, K., 1973, Astrophys.J. 181, 523

Hall, D.S. 1975, I.A.U. Colloquium 29, Vol.I. 287 (Budapest)

Houk, N. and Cowley, A.P. 1975, Michigan Spectral Catalogue, Vol.I. (University of Michigan)

Strohmeier, W., Knigge, R. and Ott, H. 1965, I.B.V.S. No. 100