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CA II EMISSION IN THE RS CVn STAR HR 1099

Recently HR 1099 (ADS 2644A) a G-type star with strong Ca II H and K reversals, has been shown to be an RS CVn binary, in fact the brightest known member of the class (Bopp and Fekel 1976; Landis and Hall 1976). In a survey of seven RS CVn stars (not including HR 1099), Weiler (1976) reported variations in the H and K and H $\alpha$  emission lines. In several cases, the phase of emission maximum coincided with the minimum of the wavelike distortion that is often present in these systems.

Spectrograms suitable for an investigation of possible variability in the H and K lines of HR 1099 were obtained at Kitt Peak National Observatory during December 1974. The spectra were obtained with the No. 2 0.9m reflector and Cassegrain spectrograph; the dispersion was  $63 \text{ \AA mm}^{-1}$ . The spectra were widened to 0.6 mm and are well exposed in the  $\lambda\lambda 3900\text{-}4000$  region. The dispersion used was insufficient to resolve the components of the double-line spectroscopic binary. From high dispersion spectra (Bopp and Fekel 1976) it is known that the primary (more massive) component has emission several times stronger than the secondary. Thus the lower dispersion data essentially test only the primary for Ca II variability.

Microdensitometer tracings of eleven spectra were made at Ritter Observatory. We measured equivalent widths of H and K relative to the interpolated local continuum. Though this required some subjective estimates of line profile and continuum placement, random errors should be comparable to those of ordinary photographic equivalent width measures ( $\sim 15\%$ ).

CA II EMISSION IN HR 1099

Plate #	HJD 2442000+	$\phi$ (ORB)	$\phi$ (PHOT)	EW( $\text{\AA}$ )	
				K	H
5494a	405.646	0.754	0.379	0.77	1.18
5494b	405.669	0.762	0.386	0.95	1.21
5494d	405.766	0.796	0.421	1.00	1.48
5498a	406.734	0.138	0.763	1.16	1.61
5500a	408.648	0.812	0.437	1.05	1.52
5500c	408.692	0.828	0.453	0.85	1.78
5504c	409.659	0.168	0.793	1.28	1.25
5507c	410.610	0.503	0.128	1.31	1.65
5508a	410.640	0.514	0.139	1.42	1.44
5508b	410.648	0.517	0.142	1.29	1.78
5509b	411.660	0.873	0.498	1.16	1.30

The results are given in the table, where orbital phases,

$\phi$ (ORB) are computed from

$$T_0(\text{JD}) = 2442763.909 + 2.83782 E$$

and the phase of the distortion wave,  $\phi$ (PHOT) is computed with the same period, but epoch  $T_0(\text{JD}) = 2442770.65$ .

The data show no convincing evidence of variation in the Ca II H-line. There may be some variability evident in the K-line, with minimum equivalent width being seen near  $\phi$ (PHOT) - 0.4-0.5. This corresponds to the phase of broad-band photometric maximum and resembles the behavior seen in Weiler's observations of other RS CVn variables. Further spectroscopy of HR 1099 is clearly needed.

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