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RECENT PHOTOMETRY OF HR 1099 (V711 Tau)

The RS CVn binary HR 1099 was observed on 26 nights during January-February 1982 with the 34-cm Cassegrain reflector of the Kavalur Observatory through standard B and V filters. An unrefrigerated 1P21 together with the conventional d.c. set up was used for the observations. The faint visual companion (ADS 2644B) was included in all the observations. The measurements were made differentially with respect to the comparison star 10 Tau. The Julian days of observation were converted into orbital phases with the following ephemeris (Landis et al. 1978):

$$JD = 2442766.069 + 2.83782 E.$$

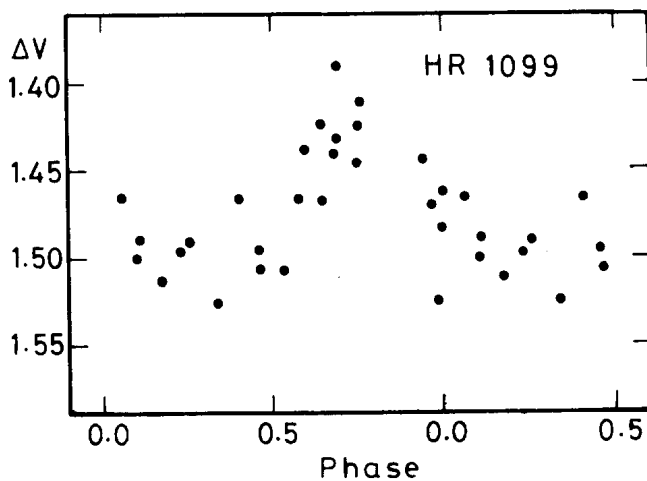


Figure 1

The figure is a plot of the ΔV magnitudes against the orbital phases. Each point is a mean of three or four independent measurements. The typical uncertainty of a value including systematic error is about 0.01 mag. The amplitude of the light variation is about 0.10 mag and the light minimum occurs at ~ 0.40 phase.

In the recent analysis of the photometric behaviour of HR 1099, Mekkaden, Raveendran and Mohin (1982) have shown that during the 1976-82 period, the brightness at light curve minimum was essentially constant with a mean value around $\Delta V = 1.60$ mag and a change in the amplitude of light variation was directly related to an increase in the brightness at light curve maximum. But the present observations indicate that the brightness at light minimum is brighter by about 0.10 mag than that of the previous years. The light curve obtained during the 1980-81 season had two minima (at phases close to 0.15 and 0.45), contrary to the observations of the earlier epochs which always showed only one minimum. The recent photometry shows a nearly sinusoidal light variation indicating that drastic changes have occurred in the distribution of 'active regions' during the period between the present and previous observing runs. It is difficult to decide to which of the two minima of the previous observing season the present minimum corresponds to and hence no definite conclusion on the migration of the photometric wave can be made.

It is interesting to note that the present observations agree well with those obtained by Cousins (1963) in the brightness at both light curve maximum and minimum and the phases at which these occur. It would be worthwhile to monitor this system continuously for the next few years for a better understanding of the nature of its activity.

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