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PHOTOMETRY OF HD 23838

The star HD 23838 (\equiv HR 1176) is included in the list of F, G & K stars having Ca H and K emission compiled by Eggen (1978). It is also included in the catalogue of emission line stars compiled by Bidelman (1954). It is thought to be a dwarf star of spectral type G0. Young (1939) has given a range of 40 km s^{-1} for its radial velocity while Abt (1969) found a range of 24 km s^{-1} . This made us suspect that HD 23838 could be an RS CVn type binary. To verify this, we have monitored this system photoelectrically as a part of our long term photometric program on RS CVn and related binaries.

We observed this system on 10 nights during 1980-81 and 1981-82 observing seasons using the 1.22m reflecting telescope of the Japal-Rangapur Observatory. HD 23728 and HD 23477 were used as comparison and check stars, respectively. The photometric equipment, method of observation and the reduction techniques employed for deriving $\Delta m(\text{var-comp})$ have been described in a previous paper on UV Piscium (Vivekananda Rao and Sarma 1983). The r.m.s. of $\Delta m(\text{check-comp})$ was found to be $\sim 0.02^m$ which indicates that the comparison is constant in brightness during the period of our observations. The values of $\Delta m(\text{var-comp})$ along with the times of observations (HJD) are available with us. As no orbital period for this system is available in the literature, we have plotted in Figure 1 the observed $\Delta m(\text{var-comp})$ versus HJD in UBV passbands.

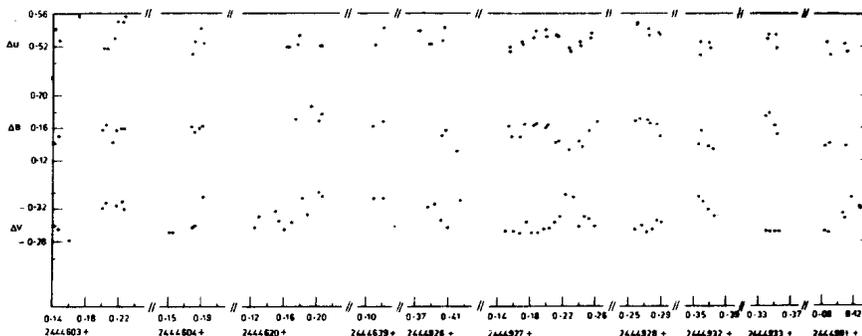


Figure 1: Photometric observations of HD 23838 in UBV passbands.

From these figures it is evident that during each of the nights the system HD 23838 does not show any systematic or abrupt variability except for small scatter which is comparable to that of the Δm (check-comparison) values. It is also found that on all the nights the mean magnitudes of the system in each of the UBV passbands remained constant within the observational uncertainties.

Spectroscopic observations of HD 23838 were made by Raghavendra Rao (1983) during the 1981-82 and 1982-83 observing seasons on 13 nights. No detectable Ca II H, K emission feature was found on any of these nights. This is quite surprising in view of its classification as Ca II emission line star both by Bidelman (1954) and Eggen (1978). It is conceivable that the star may be in low activity phase of its stellar activity cycle during our observation period. Further spectroscopic observations are required to check this suggestion.

Hence based on the presently available photometric and spectroscopic information it appears very unlikely that HD 23838 belongs to the RS CVn group.

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