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LIGHT CURVE VARIATIONS OF SV CAMELOPARDALIS

The light variability of SV Cam was firstly discovered by Guthnick (1929). Wood (1946) reported an asymmetry in the system's light curve; according to his analysis, the primary component is close to its Roche limit. Hence, the observed period and light curve variations were considered reasonable due to the instability of the primary near its limiting surface. The long-term variation in the O-C curve of SV Cam has been subjected to studies by Sommer (1956), Frieboes-Conde and Herczeg (1973), Hilditch et al. (1979), and Cellino et al. (1985) who reported different light-time periods ranging from 57.5 to 74.7 years. Hall (1976) included the system into his list of short-period RS CVn-type binaries. Meanwhile, Hilditch et al. (1979) attributed the out-of-eclipse changes to a BY Dra-type variability of the secondary component. An extensive observational material was presented by Patkós (1982). Patkós (1981) also gave a discussion on the locations of some flare-like events he observed.

We observed the system in B and V filters with the 48 cm Cassegrain reflector of Ege University Observatory on three nights in October 1985. An uncooled EMI 9781 A was the photomultiplier employed. BD $+82^{\circ}168$ has been monitored as comparison star. The differential magnitudes in the sense variable minus comparison were corrected for atmospheric extinction and the times of the individual observations were reduced to the Sun's centre. The corrected magnitudes were plotted against the phases which were computed by using the light elements given by Cellino et al. (1985) as

$$\text{Min.I=J.D.(Hel.)}\ 2426949.3939(\pm 8) + 0^{d}.59307133(\pm 3)E \quad .$$

In Figures 1 and 2, the present photoelectric light curves of the system are presented along with the unpublished photoelectric ones obtained by Celikezer (1976) in our observatory during the observing season of 1975, to demonstrate in what manner the system's light changes. What immediately can be deduced from Figures 1 and 2 when they are compared with Figure 1 of Hilditch et al. (1979) is the existence of a completely different behaviour of the individual light curves obtained in different epochs.

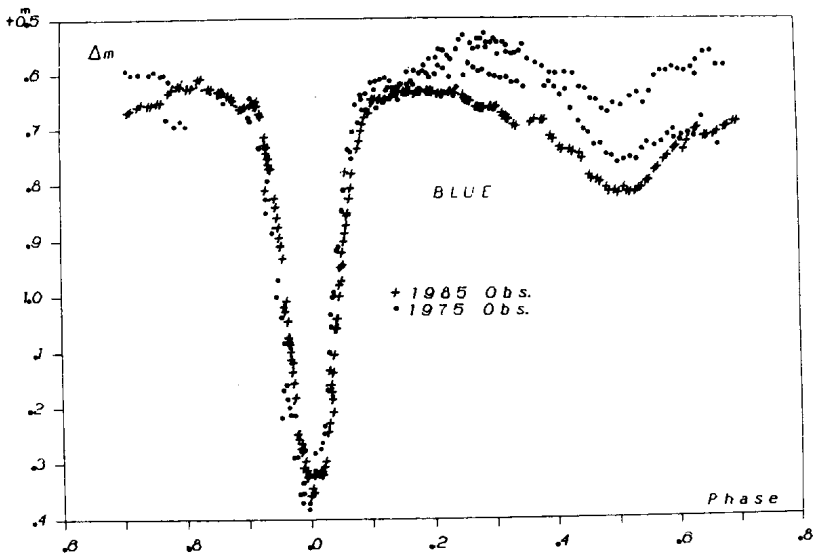

Figure 1. B light curves of SV Cam. Dots are Celikezer's observations obtained in 1975. Plus signs refer to the present observations.

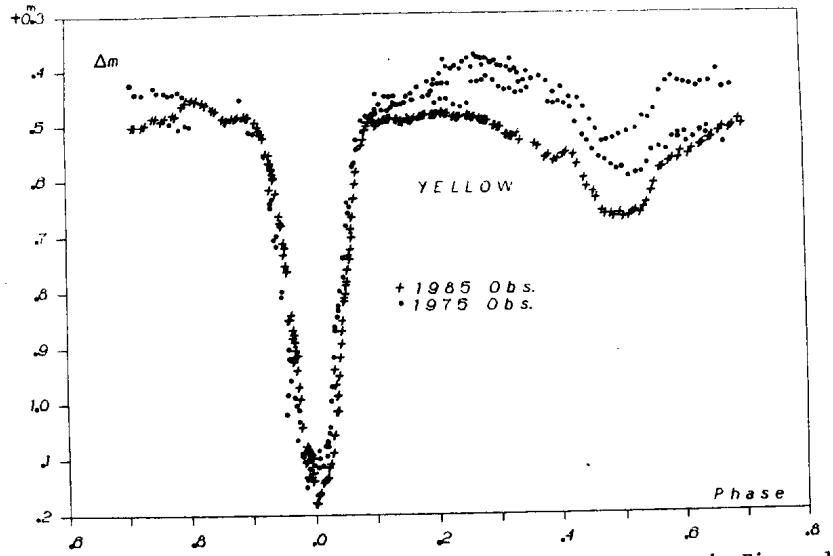

Figure 2. V light curves of SV Cam. Signs are the same as in Figure 1.

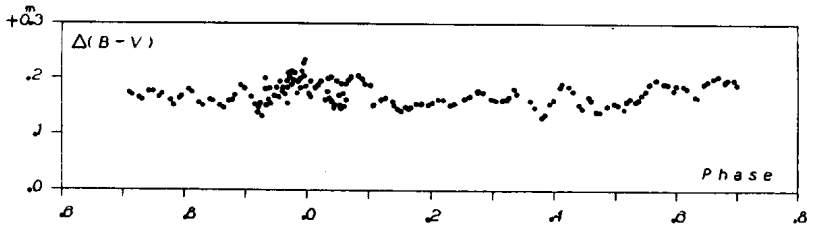

Figure 3. B-V colour variation of SV Cam in 1985 with respect to the comparison star.

According to the observations of Hilditch et al. (1979), all light curves coincide to within ±0.01 mag at mid-secondary eclipse, which normally urged them to conclude that the light curve variations are due to intrinsic variability of the cooler component which is invisible around phase 0.5. Contrary to this situation, the light curves obtained in our observatory both by us and Celikezer (1976) do not have indications of any coincidence at mid-secondary eclipse. As it is seen from Figures 1 and 2, the light levels of Celikezer's and the present light curves differ from each other not only at the secondary minimum, but also for the most parts. It is worth noting that Celikezer's observations obtained on ten nights between March-December 1975 are well separated from night to night.

As reported by Hilditch et al. (1979), only 7 percent of the secondary component is visible at phase 0.5, that is, the secondary eclipse is practically total. When this fact is considered together with the varying light levels seen in secondary minimum (see Figures 1 and 2) it seems very unlikely for the secondary component "alone" to take the whole responsibility of the system's light-curve variations.

Getting rid of making any comment for the time being here on the potential contribution(s) of the secondary component on the light-curve changes, the photoelectric observations presented in this paper evidently suggest that the primary component should have a significant role on this event. This is also consistent with the conclusions of Cellino et al. (1985) and Patkós (1981).

Figure 3 shows the colour variations of SV Cam with respect to the comparison star.

An extensive work is being carried out on the present observations of SV Cam and the results will be published in the near future.

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