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NO RAPID VARIABILITY OBSERVED FOR THE Be STARS HD 58050 AND β CMi

Two Be stars, HD 58050 (HR 2817, BD +15°1564,MWC 176; B2Ve, v sin i = = 140 km/s) and HD 58715 (β CMi, HR 2845, BD +8°1774, MWC 178; B7Ve, v sin i = = 276 km/s), announced in astronomical literature to be rapidly variable in light, were re-observed photoelectrically, in the UBV system, at Hvar and Sarajevo Observatories, Yugoslavia, in January 1982. Standard observational and reduction technique (Harmanec et al. 1977) was used. A 0.65-m reflector was employed at Hvar, and a 0.30-m reflector at Sarajevo observations. Basic information concerning these observations can be found in Table I. Reduction of the measurements were carried out at the Ondřejov Observatory. 1 CMi was used as a comparison and HD 59059 as a check star for both variables. Extinction was measured each night and taken into account in the reduction. The Hvar measurements have been transformed to the standard Johnson system, with the exception of the sole B measurements on night 3. The Sarajevo observations are - at the moment - instrumental UBV observations only.

Table I: Journal of observations

Night	Date	Intervals covered (HJD-2444000.0)	No. of ind. observations	Obs.	Remark
1	1982 Jan. 7/8	977.4174-977.4332	3	Hvar	
2	1982 Jan.14/15	984.3743-984.5582	37	Hvar	
		984.4068-984.5766	9	Sar.	
3	1982 Jan.15/16	985.3618-985.3631	1	Hvar	
		985.3618-985.4963	41	Hvar	B only
4	1982 Jan.18/19	988.4569-988.4659	3	Hvar	
		988.5250-988.5346	3	Hvar	
5	1982 Jan.25/26	995.3200-995.3366	3	Hvar	
		995.4762-995.5782	23	Hvar	

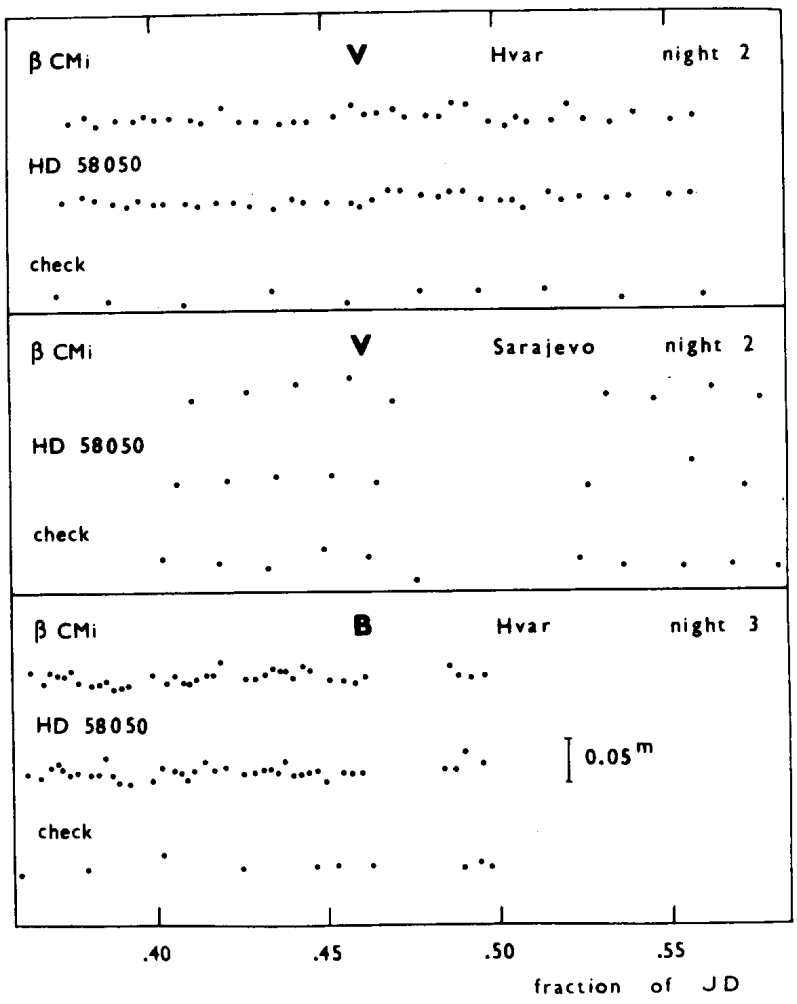

Figure 1

As Fig. 1 clearly shows, both stars were constant within $0^{m}.02$ during the observations. We plotted the V magnitude for the first, and the B magnitude for the second long observational run (nights 2 and 3, respectively) to show that the result is independent of colour. Nightly normals from all Hvar observational runs show that the stars were constant even on a time scale of days, perhaps with the exception of a somewhat larger ($0^{m}.03$) scatter in the B-V values for β CMi.

Using a photographic photometry, Hoffmeister (1934) suggested that HD 58050 may be a short-periodic variable, with the range from $6^m.0$ to $6^m.3$. Since December 1977, the star has been systematically observed visually by the European group of variable star observers (GEOS) and the following results were reported (Figer 1981a, b):

1. Long-term light variations with an amplitude of $0^m.4$ (a steep increase at the end of 1980 and a rapid fall at the beginning of 1981, after a three-year period of no long-term light changes), and

2. rapid, strictly periodic light variations superimposed over the long-term changes, with an amplitude of $0^m.15$ and a period of 0.12500 (or 0.14286) days, which remained unchanged during three years of the observations.

As Fig. 1 clearly shows, our photoelectric data do not confirm the presence of the periodic variations reported by Figer. It is known that in some Be stars rapid variations are present on one epoch and absent on another one. Yet, we suspect that the rapid variations reported by Figer may not exist at all. First, it is disturbing that the possible values of the period reported by Figer are practically exact submultiples of one day. Second, Figer used two comparison stars as red as G5 and K0 in his observations. We thus suspect that the variations observed may be spurious - caused by the observational technique used.

The case of β CMi is somewhat more complicated. Calder (1935) published magnitude differences between α CMi and β CMi measured photoelectrically and covering an interval of 4 1/2 hours. They seemed to indicate slight rapid variability. Smart (1936a, b) corrected these measurements for differential extinction and suggested that β CMi may be a pulsating star with a period of 1.8 hours and an amplitude of light variations of about $0^m.02$. Calder (1936) objected that the original observations show that the small variations observed are definitely associated with α CMi. Subsequent measurements of β CMi by Kollnig-Schattschneider (1940) and Groeneveld (1944) are not relevant to the problem because of their relatively low precision.

Because of the expected small amplitude of the variations, our data do not exclude their presence quite conclusively. Yet, our impression from Fig. 1, and from the experiments with forming floating normals from the individual measurements, is that no significant variations with a characteristic time scale of 0.08-0.09 days are present in our data.

A more detailed invesigation of both stars, and the measurements in a tabular form will be published elsewhere.

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