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SEARCH FOR SHORT TIME SCALE LIGHT VARIATION IN HD 183339 AND HD 184927

Two Bp stars, the He-weak HD 183339 and the He-rich HD 184927 was investigated for rapid light microvariability at Piszkéstető Observatory. Rapid light variation is a common phenomenon at late Ap stars, but Kurtz (1988) reported only negative results in searching for microvariability in stars, earlier than the blue edge of the delta Scuti instability strip. On the contrary, Panov (1984) found rapid light variation in two peculiar B stars: ET And (B9p He-weak, Si) and HD 183339 (B8p He-weak Si) on a time scale of a few minutes and with a range of 1-2 mmag.

The investigation reported in this note was an experiment with the 1m telescope and the new UBVRI, cooled, photon counting photometer to test its accuracy and ability for such measurements.

HD 183339

The B8 He-weak, Si star is spectrum and magnetic field variable (Glagolevskij 1984) with a supposed rotation period of 6-8 days. Panov (1984) found possible periods of 15.5 min, 12.6 min, 10.7 min and 8.5 min for rapid light variations in U and B colours, with an amplitude of 2 mmag.

The star was observed on the night May 8/9, 1988, with a coverage of three hours in UBV colors. The comparison star was HD 184240. Five second integration was used in each colour in the sequence C-B-P-C-B-..., where C, B and P notes comparison, background and program star. The magnitude differences show 0.015 mag noise, but the light curve did not show periodicity. In the power spectra of the magnitude differences peaks appeared at 4.5 min, 13 min in U, and at 4.2 min, 11.5 min and 20 min in B colour (see Figures 1 and 2) with an amplitude of 2-3 mmag. In V there were no peaks higher than 1 mmag.

Because of the high noise level the separate analysis for the programme and comparison star could not be carried out. The results are similar to those of Panov but this confirmation is not too strong.

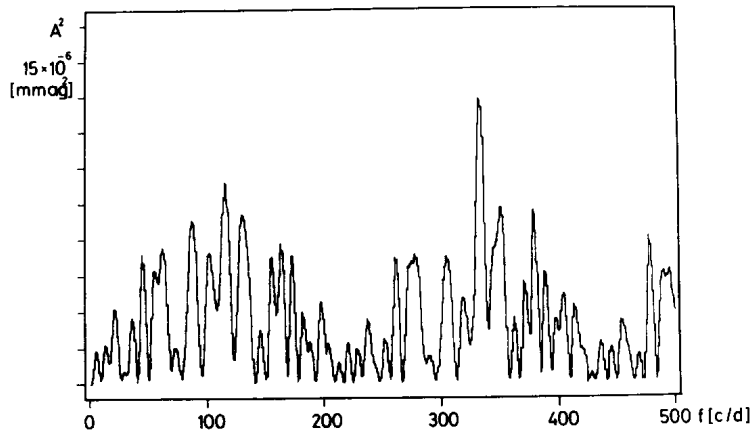

Figure 1

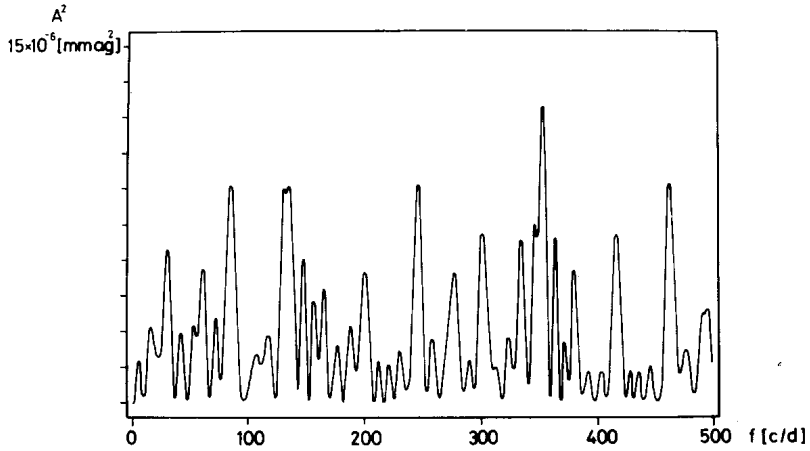

Figure 2

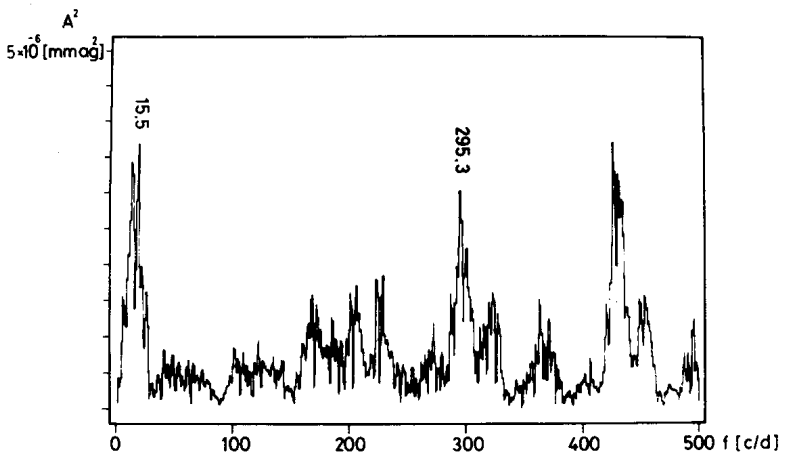

Figure 3

HD 184927

The star is a well known B2p He-rich star with a rotation period of 9.53 days. Photometric, spectroscopic and magnetic field changes coexist with the same period (Levato and Malaroda, 1979).

The investigation for rapid light variation was carried out on July 28/29 1988, for two and a half hours with two comparison stars. On other two nights, on July 31/August 1 and August 14/15 the star was measured with only one comparison star, C2, for one and half hours. The comparison stars were HD 185224 as C1, and HD 185174 as C2. The observations were only limited to the U colour of the UBV photometric system. Ten second integration was used in the sequences C1-C2-B-P-C1-C2-B-...,C2-B-P-C2-B... on the first and the two other nights, respectively.

The fluctuation of the magnitude differences usually reached 15-20 mmag, on the individual nights but the light curve did not look periodic. The results of the Fourier analysis (see Figure 3) show only noise on the night of July 28/29. On the two other nights the power spectra contain peaks at 4.2 min, 8 min and 1 hour. On the basis of the analysis it is possible that none of the investigated programme and comparison stars has a light variation larger than 3 mmag.

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