PHOTOELECTRIC OBSERVATIONS OF FLARES ON UV CETI

N.D.MELIKIAN
Byurakan Astrophysical Observatory Armenian
Academy of Sciences, USSR
V.S.SHEVCHENKO
Tashkent Astronomical Institute, Uzbek
Academy of Sciences, USSR

ABSTRACT. Synchronous observations of the UV Cet flares were carried out in 1987. Two 60-cm telescopes in U-band were used. Accuracy of syncronous registration on two telescopes is 0.001s. 15 flares were registered simultaneously during observations. Single short-time (up to 2s) light increases were observed in quiescent state and flares, which are the result of observation errors. No light increase with duration shorter than 10s was registered simultaneously on two telescopes.

For synchronous photoelectric observations of UV Ceti. Two 60-cm telescopes of Maydanak high-moutnain station of Tashkent Astronomical Institute were used, both in U - passband. The precission of their synchronization was 0.001s. The measurements were made by the photon counting method. The duration of each measurement was 2s,and the time interval between them - 0.4s (see [1]).

15 flares were detected on both telescopes during 12 hours, in October - November, 1987.

Analysis of the observed flare light curves showed that the secondary increase of star brightness on both telescopes was observed only in three cases (NN 6,14,15), duration of which in all cases exceeds 10 seconds. The light curve one of these flares are presented in Fig.1, where I_0 is the stellar intensity in normal state, and I_f is the additional intensity.

In four cases "spike-shaped" increase of star brightness were observed, with a duration less or equal to two seconds (Fig.2), but only with one telescope.

Such "spike-shaped" increases of light were detected earlier during the EV Lac flare observations (see,for example, [2,3]). Analysing the AD Leo flare observations Pettersen et al [4] have concluded that no instrumental effects could explain the observed spikes, but cosmic ray

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impacts at the photomultiplier cathode could also produce such short-lived phenomenon.

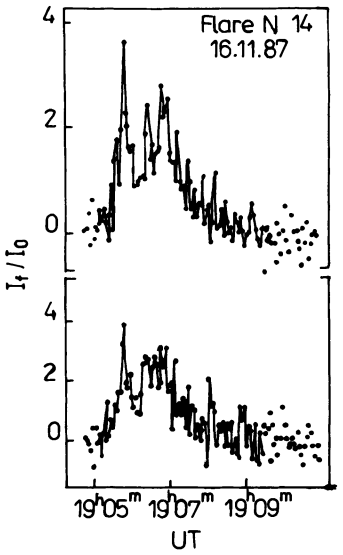

Figure 1.

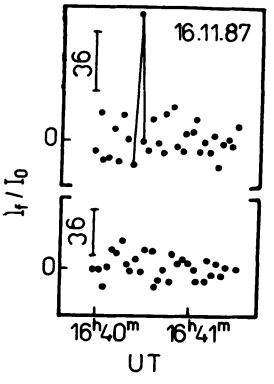

Figure 2.

We think, that such increases of brightness can be explained by the Poissonian distribution of the observational errors. The number of the points on our registrograms is about 20000. In this case the mathematical expectation for the number of "spike-shaped" increases of the brightness with the amplitudes larger or equal to 4σ according to Poissonian distribution must be

$$N_{(\Delta m \geq 4\sigma)} \simeq 3 .$$

This is in good agreement with our results.

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