

POSSIBLE NEW, BRIGHT FLARE STAR IN THE PLEIADES REGION

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ABSTRACT. With the aid of the star track method we discovered a possible new, relatively bright, flare star in the Pleiades region.

During the last few years in the mountain station of the Konkoly Observatory we introduced the star track method (which originally was developed in Bjurakan, Chavushian (1986)) for photographic flare star observations.

To get the star image to move at a constant velocity on the photographic plate, we changed the original clock frequency of the clockwork of our 60/90 cm Schmidt to a lower one. Technically it means that we replaced the original 1 kHz frequency standard with a new quartz controlled device in which we could change the output frequency in 0.1 Hz steps. Corresponding to the speed of the movement the limiting magnitude on our U plates (with KODAK 103a0 emulsions + UG2 filter) is between 14 - 14.5 magnitude.

For the evaluation of the observed material we used a modified Zeiss Microdensitometer (Kelemen, (1989)). Using this instrument we were able to control the scanning procedure and the data handling with the aid of a microcomputer.

Unfortunately we had to preselect the plate material, because this method is very sensitive to the short timescale weather instabilities, which was smoothed out in the previous multiexposure technique.

As a preliminary result we found a previously unknown i.e. not catalogued (Haro et al. (1982)) star, which showed an approximately 30 minute long brightening (see Chart 1). The brightening had a flare like light curve.

The date of the event: 02.10.1986
time of the maximum : 01:46 a.m. (UT)
m(U) quiescent : 13.1 mg(U)
amplitude : 0.8 - 0.9 mg(U)

The light curve resembles and is characteristic of the so

called slow flares (Fig. 1.). The rising time was about 10 minutes long and after the maximum the fading went on a moderate rate.

Because the exposure was ended before the star reached its quiescent brightness the decay time must be at least 30 min. The estimated quiescent U magnitude of the star is 13.9 mg(U) and the amplitude of the brightening was 0.8 - 0.9 magnitude. For comparison Fig. 2. shows a parallel record of a 13.9 mg(U) star. (Star "T" in the photoelectric sequence (based on Johnson et al. (1958)) from Henden et al. (1982))

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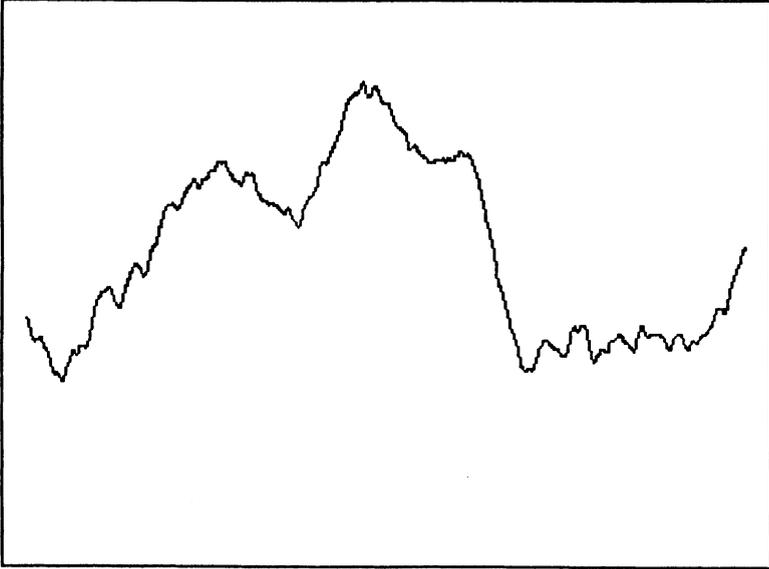


Figure 1. Moving average plot of the flare up.

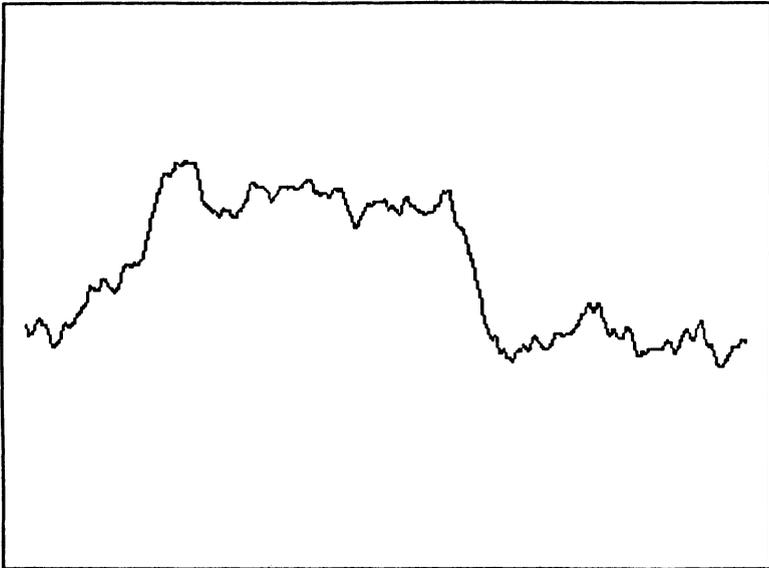


Figure 2. Moving average plot of the comparison star "T".

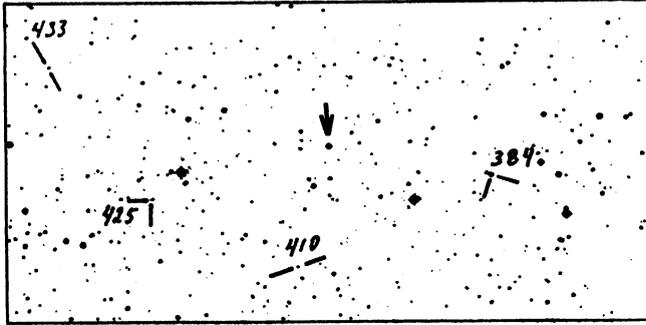


Chart 1. Enlarged part of the Map 14. published in G. Haro et al. (1982). The arrow points to the suspected new flare star.