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LONG-TERM BRIGHTNESS CHANGES OF TWO CVS

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Abstract. The long-term light curves of the AM Her type binary BY Cam and the nova-like variable PG 2133+115 are presented. The *BVR* observations were carried out at a 0.5 m telescope equipped with a high sensitive TV tube superisocon (Abramenko et al. 1978), the *UBV* photoelectric data were obtained at 0.6 and 1.25 m telescopes and the photographic estimates were made from the negatives obtained at the 0.4 m astrograph in Crimea.

Both stars show high and low brightness states. They show similar behaviour in some respects: the amplitude between high and low states was about two magnitudes in *B*, but the duration of a low state was approximately two months for BY Cam and 1...2 years for PG 2133+115.

1. PG 2133+115

Green, Ferguson & Liebert (1982) noted that this star has a UV excess and so is possibly a CV. We obtained *UBV* (1984–95) and photographic (1960–95) observations of this CV. On average, magnitudes and colours were as follows: $V = 14.7$ mag, $B - V = 0.0$ mag, $U - B = -0.9$ mag. Misselt & Shafter (1995) and the current authors did not detect the period of 2.9 h, found earlier from radial velocity variations. According to the photographic observations in 1969–70 the object was 2 mag fainter than the mean level and 1 mag light variations with a time-scale of 10...20 days were observed (see Fig. 1).

We suggest that PG 2133+115 is a CV which is principally in the 'on' brightness state and is observed at a comparatively small inclination angle.

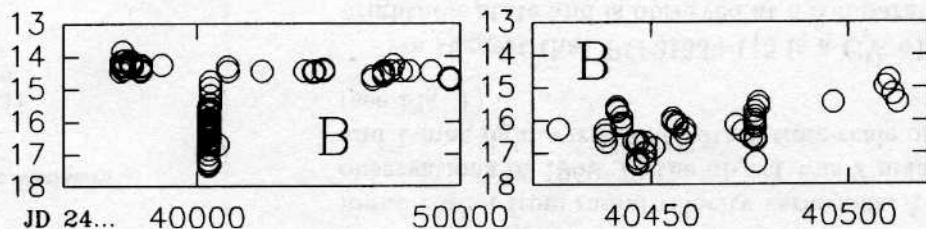


Figure 1. Left: PG 2133+115 in 1960-94. Right: The low state in 1969.

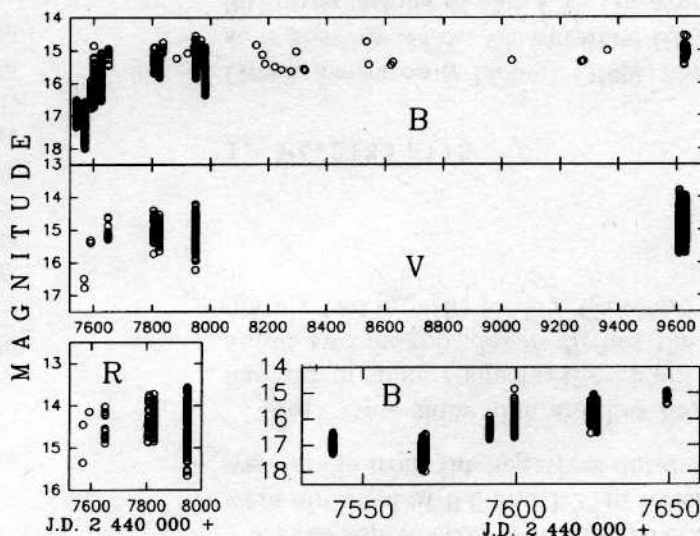


Figure 2. Left: BY Cam in 1989-94. Right: Low and intermediate states of BY Cam.

2. BY Cam

TV observations of BY Cam were obtained in 1989-90 and in 1994, photoelectric in 1994, and photographic estimates in 1953-93. The *BVR* light curve is shown in Fig. 2 (left), which demonstrates the low and high brightness states. In more detail the low and intermediate states are shown in Fig. 2 (right). The low state duration was a brief episode lasting two months only, returning to the high brightness level during three months. The maximal amplitude of the long-term variations was detected in *B* (2 mag).

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