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VY Scl-TYPE STAR V504 Cen

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V504 Cen is classified as a possible R CrB-type star in General Catalogue of Variable Stars (Kholopov et al., 1985). Almost nothing has been published on its nature of variability. Kilkenny and Lloyd Evans (1989), during the course of a systematic study of R CrB-type candidates, noticed that V504 Cen shows broad Balmer emission lines. From this spectroscopic feature, Kilkenny and Lloyd Evans (1989) concluded that V504 Cen is a cataclysmic variable (CV), and not a R CrB-type star. Although Kilkenny and Lloyd Evans (1989) proposed that this star may be a VY Scl-type CV, which is characterized by the presence of occasional deep fadings, the lack of long-term light curve with sufficient limiting magnitudes made the classification rather inconclusive. In spite of this report, the object has been largely neglected from the past CV research. The object has not been listed in any comprehensive CV catalogs, including the latest edition of the CV catalog by Downes et al. (2001).

We here present first-ever published light curve of V504 Cen, which clearly demonstrates the VY Scl-type nature. The light curve is drawn from visual observations (RS) and ASAS-3 *V*-band public data (Pojmanski, 2002). A 0.45 mag systematic correction was added to RS's visual observations based on the RASNZ comparison stars, in order to best match the ASAS-3 *V* magnitudes. Figure 1 shows the entire light curve between 1998 and 2003. A deep fading episode between JD 2452346 and 2452650 is apparent. The fading portion of this fading episode was not recorded because of the solar conjunction. Although not shown in the light curve, 49 ASAS-3 observations between JD 2452405 and 2452705 gave only negative detections. The object must have been fainter than $V=13.6$ during this period.

The duration (between 300 and 400 days) and depth (>2.0 mag) are typical for VY Scl-type fadings (Greiner, 1998). Figure 2 shows the enlarged light curve of the rising portion observed in early 2003. After reaching $V=13.7$, the object slowly returned to its maximum magnitude. The rising rate between JD 2452714 and 2452784 is 0.005 mag d^{-1} . Such a slow final rise to the maximum is characteristic to the VY Scl-type phenomenon (Greiner, 1998; Kato et al., 2002). In all aspects, V504 Cen is now firmly classified as a typical VY Scl-type CV.

Since there is no finding chart of V504 Cen readily available, we note the following identification: V504 Cen = GSC 7808.1570 located at $14^{\text{h}}12^{\text{m}}49^{\text{s}}.11$, $-40^{\circ}21'37''.1$ (J2000.0, GSC 1.2).

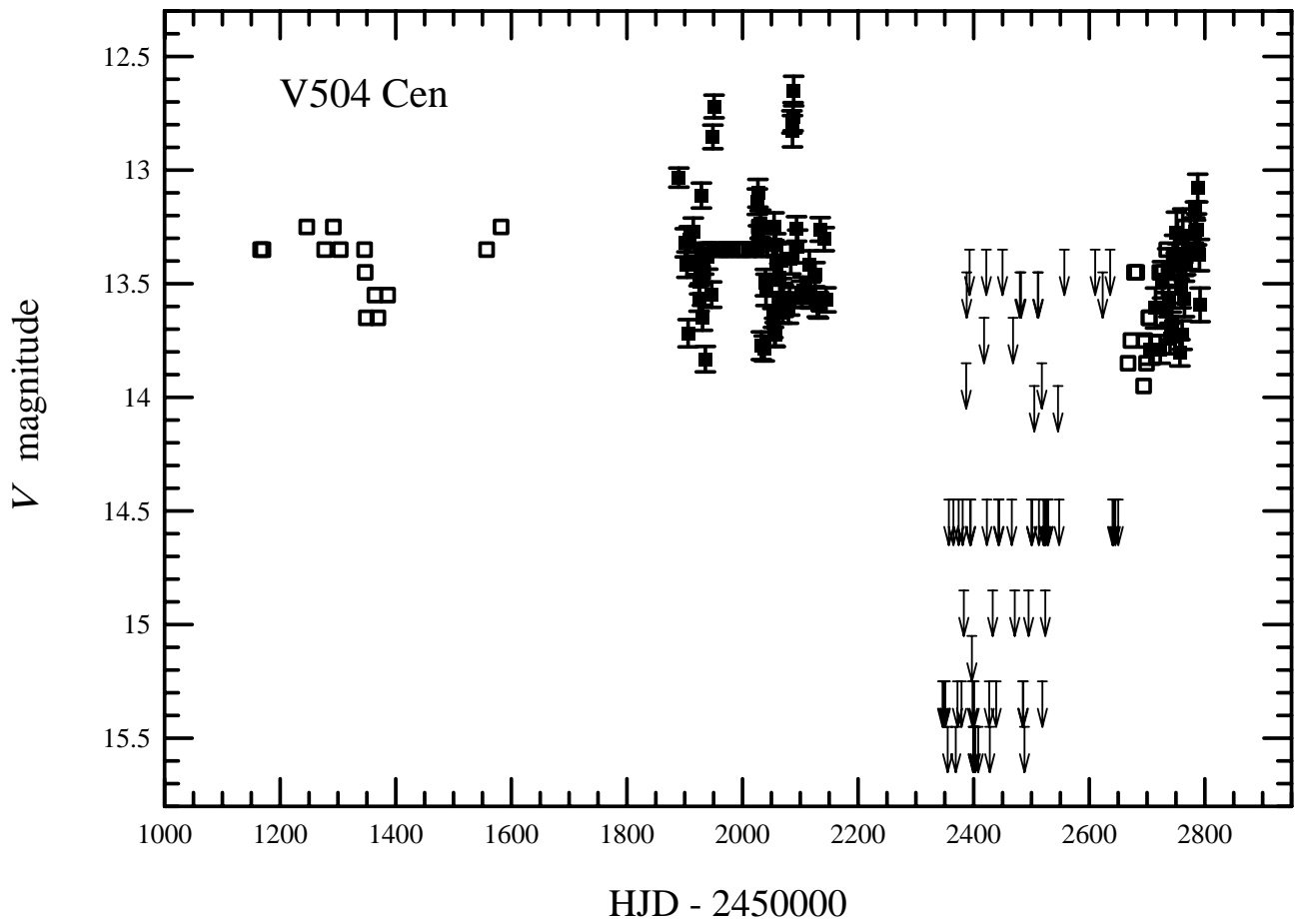


Figure 1. Light curve of V504 Cen from RS's visual observations and the ASAS-3 V-band public data. The filled squares with error bars and open squares represent ASAS-3 data and RS's measurements, respectively. (The straight bar between JD 2451936 and 2452041 represents RS's observations). The arrows represent upper limit observations by RS.

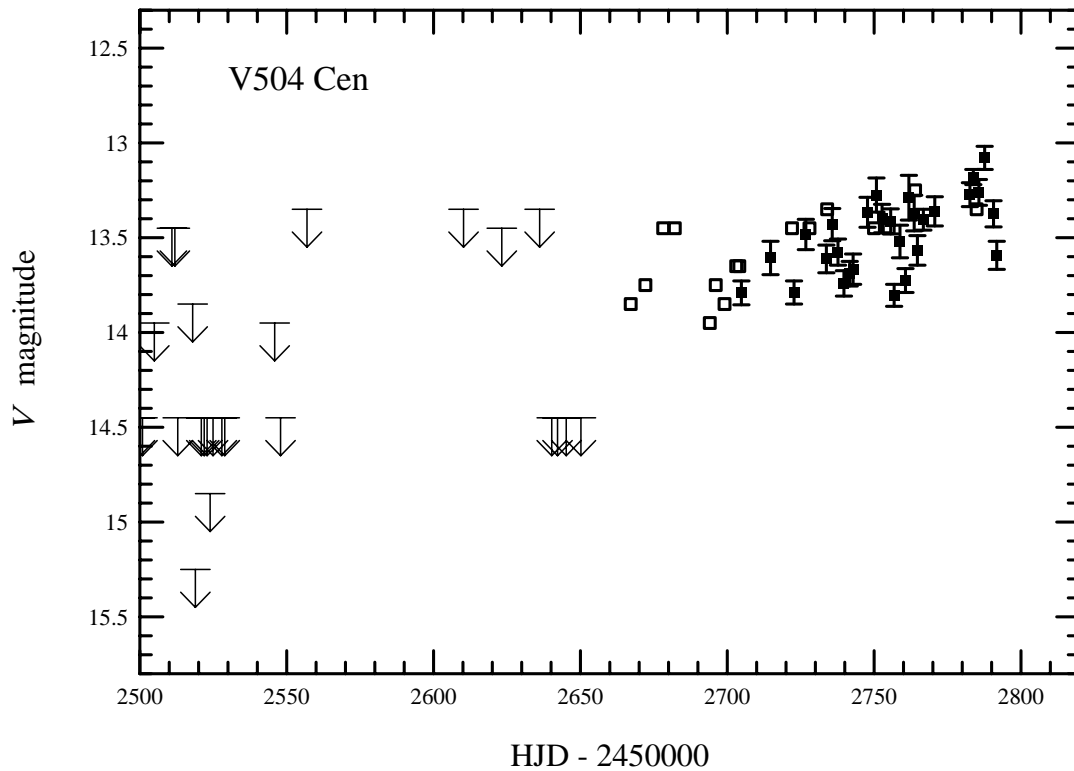


Figure 2. Enlarged light curve of the recovery stage from the deep fading. The symbols are the same as in Figure 1.

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