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UNUSUAL FADING OF V1357 CYGNI (Cyg X-1) IN EARLY NOVEMBER, 1996

Monitoring of V1357 Cyg, an optical counterpart of the X-ray source Cyg X-1 and known black hole candidate, was carried out at Tien-Shan astronomical observatory (Kazakhstan) from October 4 to November 14, 1996. The 1-meter reflector and a four channel WBVR photometer were used. The A1V type star HD 189474 ($19^h58^m51^s.6$, $+35°29'52"$; 2000, V = $6^m.998$) was used as a comparison star in this observational set. Its magnitudes were taken from the Catalogue of WBVR Magnitudes of Northern Sky Bright Stars (Kornilov et al. 1991). Two check stars selected by Lyutyi (1972), 'a' ($19^h58^m21^s.7$, $+35°13'54"$; 2000) and 'c' ($19^h58^m06^s.3$, $+35°22'47"$; 2000), were measured regularly with the variable star. The 22" diaphragm was always used for the visual binary 'a', thus we measured the combined brightness. The star 'a' was found to be a small amplitude variable in the range of $10^m.012 - 10^m.035$ V, with one of the two possible periods: $P_1 = 4^d.223 \pm 0.005$ and $P_2 = 1^d.3009 \pm 0.0005$.

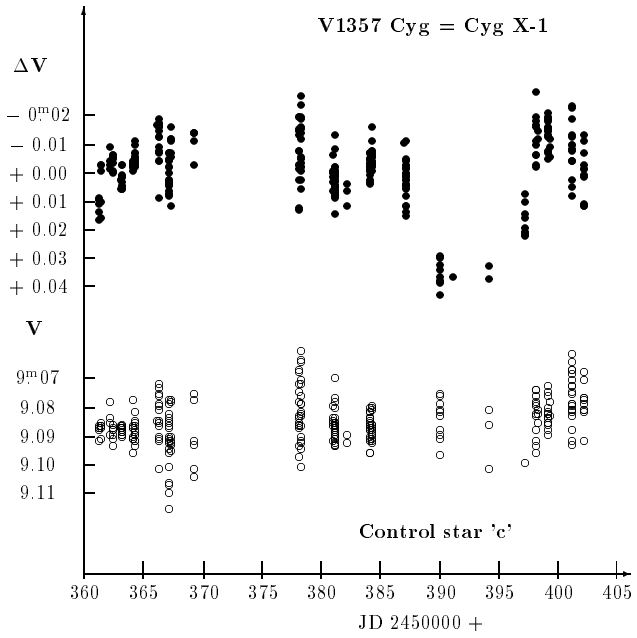

Figure 1. Light curves of V1357 Cyg and of the check star. ΔV are deviations of observations from the mean ellipsoidal light curve.

V1357 Cyg normally shows ellipsoidal double wave variability with the period of P = $5^{d}.6$ and the total mean amplitude of $0^{m}.05$ V. The accuracy of an individual measurement was in the range of $0^{m}.003-0^{m}.010$. But on November 2 the star was found to be fainter by $0^{m}.04$ V than the mean ellipsoidal wave level and its brightness became lower by $0^{m}.02$ than Min I. Deep fading of V1357 Cyg without colour variations was seen on JD 2450390 – 397. During this time the star demonstrated ellipsoidal variations with the former amplitude in all the photometric bands. Figure 1 shows light deviations of V1357 Cyg in V band against the normal double wave level and the light curve of the check star 'c'. The OB star light predominates in the radiation of this system. The contribution of the accretion disk into combined light was estimated by Bruevich et al. (1978) to be $0^{m}.04$ V. This value is approximately equal to the depth of the fading. The dramatic change of the brightness level may suggest a strong change of the accretion disk structure which has led to the disappearance of the optical radiation from the disk.

It would be very important to know the behaviour of the X-ray radiation at this time.

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