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**PLATE ARCHIVE PHOTOMETRY OF THE PROGENITORS OF
NOVA CYG 2008 N.2 AND NOVA SGR 2008**

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Nova Cyg 2008 N.2 (= V2491 Cyg) and Nova Sgr 2008 (= V5579 Sgr) were discovered on 10 April 10 and 18 April 2008, respectively. A summary of the discovery circumstances and early studies of these two novae has been presented by Henden and Munari (2008). To the aim of providing more information on the nature of these two novae, we have searched the archives of the Asiago Schmidt telescopes for photographic plates imaging their progenitors.

Henden and Munari (2008) found the position of Nova Cyg 2008 N.2 to be coincident with the faint star USNO-B1.0 1223-042965 (within 0.9 arcsec). We located 131 Asiago photographic plates covering the position of Nova Cyg 2008 N.2, 44 of which were later discarded for various reasons (too bright sky background, poor focus or guiding, too bright limiting magnitude, or other plate defects). A total of 87 good *B* and *V* plates (exposed between Oct 4, 1970 and Oct 10, 1986) were then retained, and the magnitude of the progenitor was eye-estimated at the microscope against the *BVR_CI_C* photometric calibration sequence of Henden and Munari (2008). The results are given in Table 1 (available electronic only) and plotted for the *B*-band in Figure 1. During the 16 years covered by the Asiago archive plates, no outburst or large variability was detected. The progenitor remained stable around the mean values:

$$\langle B \rangle = 17.88 \quad (\text{dispersion } 0.20 \text{ mag}) \quad (1)$$

$$\langle V \rangle = 17.06 \quad (\text{dispersion } 0.22 \text{ mag}) \quad (2)$$

$$\langle B - V \rangle = +0.82 \quad (3)$$

$$\langle V \rangle - R_C^{POSS-II} = +0.73 \quad (4)$$

The $V - R_C$ is obtained by comparison with POSS-II plate on which the progenitor shines at $R_C \approx 16.33$ mag. Comparing with maximum brightness attended by the nova, the outburst amplitude has been $\Delta B=8.9$, $\Delta V=8.5$ mag and $\Delta R_C=8.7$. Such a limited amplitude is in sharp contrast with the rapid decline of Nova Cyg 2008 N.2. A 8.7 mag amplitude would correspond to a mean decline time $t_2 \approx 200$ days (cf. Warner 1995, his Figure 5.4), a dozen times slower than the observed $t_2 \sim 17$ days (Munari et al. 2008).

A serendipitous monitoring of the field of Nova Cyg 2008 N.2 was carried out by Balman et al. (2008) from July to November 2007. They failed to reveal any source at the nova

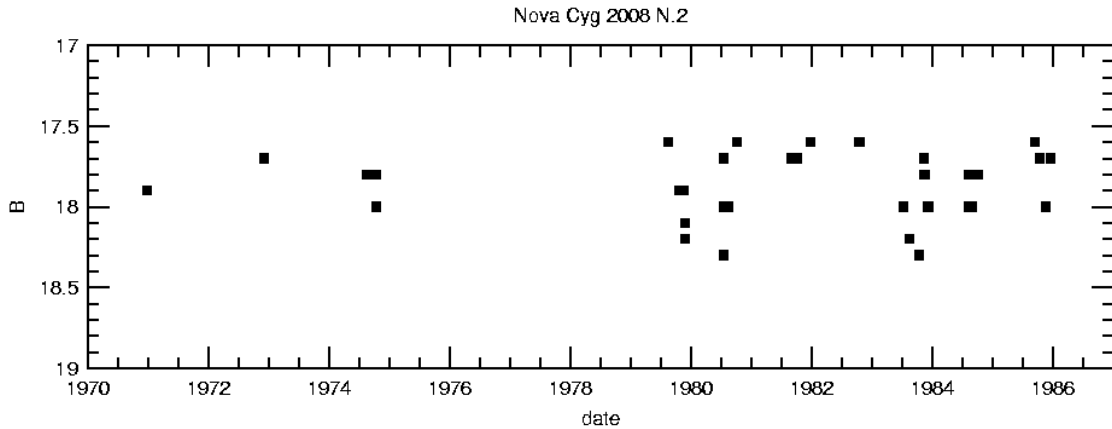


Figure 1. B band photometry of the progenitor of Nova Cyg 2008 N.2 from photographic plates of the Asiago Schmidt telescopes archives, showing its constancy in brightness over the period 1970-1986.

position brighter than the $R_C=18.2$ mag limiting magnitude of their observations. Balman et al. (2008) do not specify what is the astrometric position they assumed for the nova. They linked their magnitude scale to USNO-B1 R_C magnitudes of the surrounding stars. By comparing with the Henden and Munari (2008) photometric sequence, no systematic offset larger than 0.1 mag is likely to affect the USNO-B1 R_C values. This would imply that the progenitor of Nova Cyg 2008 N.2, which was photometrically stable over the period 1970-1986, should have turned fainter by $\Delta R_C \geq 2$ mag for several months right before to erupt as a nova. This behavior would be highly peculiar and has no correspondence among other novae, which instead in some cases tend to show an *increase* in their luminosities in the years before the outburst (cf. Robinson 1975). It seems therefore worthwhile that Balman et al. (2008) specify the astrometric position they assumed for the nova and possibly publish a zoomed picture of the field from their piled-up CCD R_C observations.

Similarly for Nova Cyg 2008 N.2, we searched the Asiago Schmidt plate archives also for Nova Sgr 2008, and found 106 plates covering its position. After plate inspection, 58 good B and I_C band plates were finally retained. We adopted nova position and photometric comparison sequence from Henden and Munari (2008). The 58 good plates cover the period June 16, 1961 to 24 July, 1977, with an average limiting magnitude $B \sim 18$, $I_C \sim 15.5$. They are listed in Table 2 (available electronic only). The progenitor was below limiting magnitude on all the plates.

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