

COMMISSIONS 27 AND 42 OF THE IAU  
INFORMATION BULLETIN ON VARIABLE STARS

Number 5822

Konkoly Observatory  
Budapest  
10 April 2008

*HU ISSN 0374 – 0676*

**PHOTOMETRIC SEQUENCES AND ASTROMETRIC POSITIONS  
OF NOVA Vul 2007 N.2 AND NOVA Cyg 2008**

HENDEN, ARNE<sup>1</sup>; MUNARI, ULISSE<sup>2</sup>

<sup>1</sup> AAVSO, American Association of Variable Star Observers, 49 Bay State Road, Cambridge, MA 02138, USA

<sup>2</sup> INAF Osservatorio Astronomico di Padova, Sede di Asiago, I-36032 Asiago (VI), Italy

Nova Vul 2007 N.2 (= V459 Vul) was discovered by H. Kaneda at  $\sim 8.7$  mag on Dec 25.35 UT (cf. Nakano, 2007). Spectroscopic confirmation was provided by Yamaoka (2007) and Munari et al. (2007). The latter reported a peak brightness  $V = 7.58$  and  $B - V = +1.10$  on Dec. 27.75 UT. At that time the spectrum was characterized by strong absorptions, with feeble emission components visible only in  $H\alpha$  and  $OI\ 7772\ \text{\AA}$ . A day later, the absorption spectrum weakened remarkably and a rich and strong emission line spectrum appeared, typical of novae soon after maximum.

Nova Cyg 2008 (= V2468 Cyg) was also discovered by H. Kaneda, at  $\sim 8.2$  mag on Mar 7.80 UT (cf. Nakano, 2008), and spectroscopic confirmation was provided by Nogami et al. (2008). On Mar 8.8 UT, they observed a rich emission line spectrum, with velocities and P-Cyg profiles typical of novae close to maximum brightness.

In this note we present a  $BVR_CI_C$  photometric sequence around both novae, optimized for CCD observations and their color corrections. To calibrate the sequences, we obtained CCD photometry with the Sonoita Research Observatory 0.35-m robotic telescope on several distinct photometric nights, using  $BVR_CI_C$  filters and an SBIG STL-1001E CCD camera. Pixel size is  $1''.25/\text{pix}$  and the field of view is  $20' \times 20'$ . Observations on each photometric night included following an extinction star from low to high airmass, along with  $BVR_CI_C$  exposures of Landolt standard fields (Landolt, 1983, 1992). The photometric sequences are presented in Figures 1 and 2.

Some very red stars are included in these sequences for the purpose of extending over a wide color range the determination of the transformation coefficients. When intrinsic, such red colors are generally associated to variable cool stars. However, both fields suffer from large reddenings. In fact, both novae at maximum displayed colors reddened by  $E(B - V) \geq 0.6$  and in both cases blue field stars are missing. Thus, the very red stars included in the sequences are such at least in part because of the large reddenings and not necessarily because they are intrinsically very cool. Nevertheless, these stars have not been observed sufficiently often to guard against possible variability.

Astrometry was performed using SLALIB (Wallace, 1994) linear plate transformation routines in conjunction with the UCAC2 reference catalog. Errors in coordinates were less than 0.1 arcsec in both coordinates, referred to the mean coordinate zero point of the reference stars in each field.

The coordinates we derived for Nova Vul 2007 N.2 are  $\alpha_{J2000} = 19^{\text{h}}48^{\text{m}}08^{\text{s}}.866 (\pm 0^{\text{s}}.026)$ ,  $\delta_{J2000} = +21^{\circ}15'26''.67 (\pm 0''.027)$ , close to the coordinates reported by Kaneda (2007) at position end figures 08<sup>s</sup>89 and 26<sup>''</sup>.8. Within 0.1 arcsec of this position there is the very faint star USNO-B1.0 1112-0430634, detected only on red POSS-II plates at  $R = 20$  mag and with no counterpart in the 2MASS catalog. Its position end figures are 08<sup>s</sup>87 and 26<sup>''</sup>.8 (1 arcsec error). If this was the progenitor, the amplitude of the outburst in the  $B$  band exceeded 12.5 mag.

Our coordinates for Nova Cyg 2008 are:  $\alpha_{J2000} = 19^{\text{h}}58^{\text{m}}33^{\text{s}}.36 (\pm 0^{\text{s}}.18)$ ,  $\delta_{J2000} = +29^{\circ}52'06''.6 (\pm 0''.31)$ , close to the coordinates reported by Nakano (2008) at position end figures 33<sup>s</sup>39 and 06<sup>''</sup>.5. Three arcsec away there is the very faint star USNO-B1 1198-0459968 ( $R = 18$  mag) at position end figures 33<sup>s</sup>.16 and 06<sup>''</sup>.4 (1 arcsec error), visible only on POSS-II red plates and not on blue ones, with no counterpart in the 2MASS catalog. If this star was the progenitor, the amplitude of the outburst was larger than 12 mag in the  $B$  band.

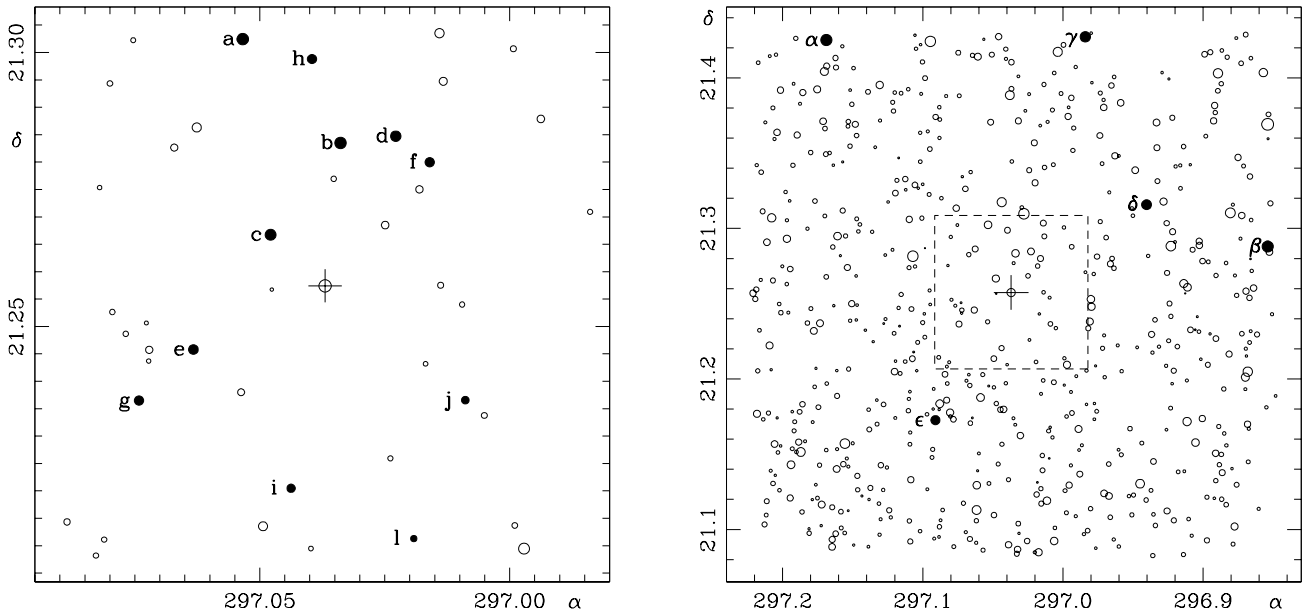
We would like to thank J. Gross, W. Cooney and D. Terrell for their help in setting up the SRO observations and relinquishing their observing time.

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Nova Vul 2007 N.2      $\alpha_{J2000} = 19\ 48\ 08.87$       $\delta_{J2000} = +21\ 15\ 26.7$

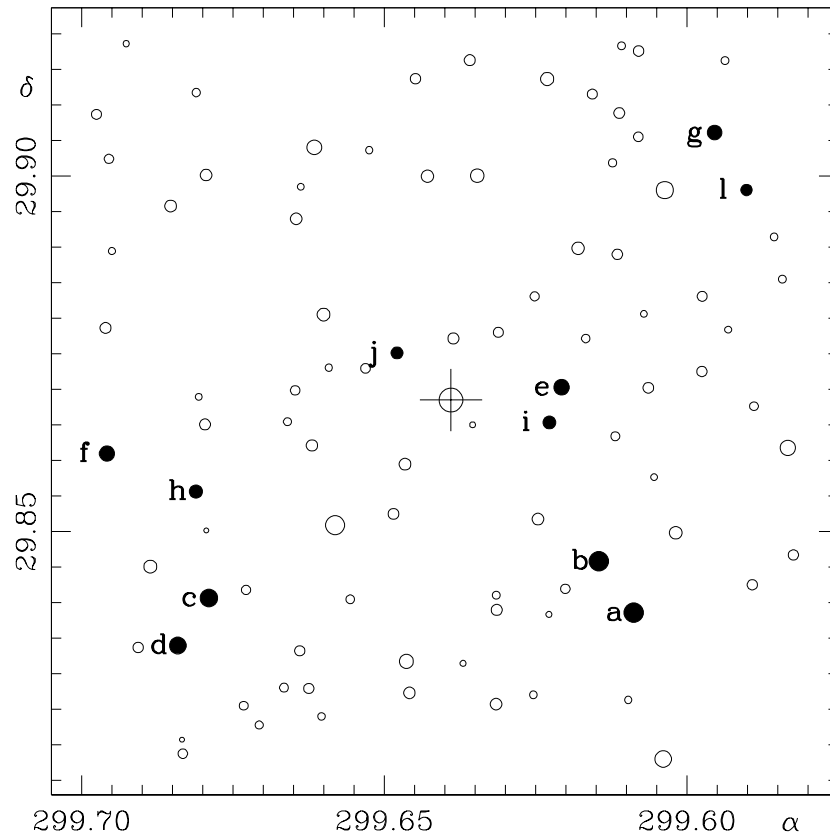
	$\alpha_{J2000}$ ( $\pm''$ )		$\delta_{J2000}$ ( $\pm''$ )		N	V ( $\pm$ )		B-V ( $\pm$ )		V-R <sub>C</sub> ( $\pm$ )		R <sub>C</sub> -I <sub>C</sub> ( $\pm$ )		V-I <sub>C</sub> ( $\pm$ )	
a	297.053417	0.019	+21.302438	0.018	3	12.963	0.015	0.700	0.009	0.411	0.020	0.436	0.018	0.849	0.007
b	297.033846	0.019	+21.283494	0.012	3	13.009	0.010	1.764	0.020	0.973	0.021	0.902	0.018	1.868	0.039
c	297.047833	0.032	+21.266738	0.021	3	13.278	0.015	1.965	0.025	1.133	0.015	1.048	0.030	2.173	0.043
d	297.022789	0.023	+21.284726	0.010	3	13.477	0.014	0.776	0.013	0.462	0.017	0.481	0.020	0.945	0.008
e	297.063279	0.019	+21.245797	0.023	3	13.898	0.015	0.532	0.008	0.297	0.020	0.362	0.020	0.665	0.005
f	297.015996	0.013	+21.279974	0.019	3	14.021	0.020	0.571	0.007	0.301	0.017	0.355	0.022	0.662	0.012
g	297.074160	0.059	+21.236478	0.016	3	14.091	0.016	1.485	0.016	0.838	0.021	0.834	0.018	1.671	0.007
h	297.039547	0.046	+21.298807	0.030	3	14.137	0.015	0.815	0.015	0.479	0.018	0.495	0.019	0.976	0.005
i	297.043746	0.078	+21.220482	0.115	3	14.573	0.017	0.912	0.021	0.514	0.022	0.492	0.017	1.003	0.006
j	297.008875	0.042	+21.236568	0.014	3	14.927	0.021	0.776	0.026	0.460	0.016	0.539	0.024	1.007	0.017
l	297.019181	0.085	+21.211302	0.047	3	15.542	0.015	1.053	0.063	0.609	0.030	0.586	0.018	1.193	0.019
$\alpha$	297.168824	0.000	+21.425196	0.038	3	10.583	0.017	0.238	0.023	0.083	0.045			0.384	0.013
$\beta$	296.853879	0.035	+21.288030	0.007	3	10.715	0.044	0.166	0.045	0.115	0.028	0.283	0.033	0.407	0.030
$\gamma$	296.984049	0.037	+21.427287	0.016	3	11.096	0.018	0.994	0.011	0.391	0.061	0.406	0.032	0.799	0.032
$\delta$	296.940301	0.028	+21.315796	0.008	3	11.490	0.015	0.357	0.016	0.177	0.045	0.239	0.040	0.422	0.011
$\epsilon$	297.090971	0.013	+21.172636	0.020	3	11.952	0.015	0.338	0.007	0.174	0.017	0.232	0.021	0.411	0.010



**Figure 1.**  $BVR_C I_C$  photometric comparison sequence around Nova Vul 2007 N.2. The cross indicates the nova.  $N$  is the number of nights in which the given star has been measured in the given band. The error in  $\alpha$  and  $\delta$  are in arcsec. The panel on the right covers a  $20' \times 20'$  area centered on the nova and shows stars down to  $V=17.0$ . The dashed  $6' \times 6'$  area is zoomed in on the left panel.

Nova Cyg 2008      $\alpha_{J2000} = 19\ 58\ 33.36$       $\delta_{J2000} = +29\ 52\ 06.6$

	$\alpha_{J2000}$ ( $\pm''$ )	$\delta_{J2000}$ ( $\pm''$ )	N	V ( $\pm$ )	B-V ( $\pm$ )	V-R <sub>C</sub> ( $\pm$ )	R <sub>C</sub> -I <sub>C</sub> ( $\pm$ )	V-I <sub>C</sub> ( $\pm$ )							
a	299.608794	0.037	+29.838600	0.041	3	11.610	0.012	0.599	0.059	0.373	0.040	0.297	0.034	0.664	0.051
b	299.614562	0.052	+29.845833	0.015	3	11.670	0.009	0.205	0.013	0.142	0.015	0.107	0.024	0.247	0.033
c	299.678984	0.049	+29.840657	0.017	3	12.266	0.004	1.247	0.009	0.808	0.016	0.776	0.040	1.581	0.055
d	299.684122	0.069	+29.833979	0.015	3	12.620	0.010	0.931	0.016	0.548	0.016	0.407	0.022	0.942	0.029
e	299.620718	0.055	+29.870303	0.023	3	13.052	0.010	0.396	0.010	0.259	0.015	0.231	0.024	0.488	0.032
f	299.695823	0.054	+29.860969	0.014	3	13.161	0.007	0.768	0.010	0.459	0.014	0.366	0.023	0.817	0.028
g	299.595427	0.012	+29.906124	0.015	3	13.375	0.010	1.779	0.026	1.004	0.019	0.895	0.023	1.888	0.029
h	299.681125	0.052	+29.855634	0.022	3	13.884	0.013	0.448	0.018	0.280	0.018	0.241	0.027	0.517	0.038
i	299.622727	0.063	+29.865338	0.047	3	14.014	0.011	1.451	0.023	0.850	0.020	0.765	0.023	1.606	0.033
j	299.647902	0.068	+29.875127	0.023	3	14.366	0.011	0.548	0.019	0.379	0.016	0.350	0.035	0.727	0.037
l	299.590166	0.082	+29.898026	0.036	3	14.553	0.013	1.266	0.034	0.743	0.018	0.659	0.023	1.394	0.033



**Figure 2.**  $BVR_C I_C$  photometric comparison sequence around Nova Cyg 2008. The cross indicates the nova.  $N$  is the number of nights in which the given star has been measured in the given band. The error in  $\alpha$  and  $\delta$  are in arcsec. The panel covers a  $6' \times 6'$  area centered on the nova and shows stars down to  $V=17.0$ . Star  $b$  is HD 33314.