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Photometry and spectroscopy of Nova Cas 2020 (TCP J00114297+6611190)

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on 30 Jul 2020; 09:01 UT

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Nova Cas 2020 (=TCP J00114297+6611190) has been discovered on 2020 Jul 27.930 UT on images taken with an F=135mm f/2.0 telephoto lens as part of the NMW survey (Sokolovsky et al. 2014, ASPC, 490, 395), and classified as a FeII-type nova on spectra taken with SAI 2.5m telescope on July 29.025 UT (ATel #13903).

On July 30.026 UT, we have obtained BVRI photometry of Nova Cas 2020 with ANS Collaboration telescope ID 1301. The data, fully transformed to the Landolt system, provide $B=15.443$, $V=13.828$, $R=12.596$, $I=11.529$ with a total error budget (Poissonian + transformation equations) less than 0.01 mag in all bands. Comparison with BVR photometry for July 28.923 UT reported in ATel #13904 suggests a decline of 0.17 mag in V. The observed color $B-V = +1.615$, compared with the intrinsic color of novae at maximum brightness as derived by van den Bergh and Younger (1987, Astron. Astrophys. Sup. 70, 125), suggests a large reddening amounting to $E(B-V)=1.39$ mag.

An high quality, high S/N spectrum of Nova Cas 2020 has been obtained on July 29.960 UT, over the 3400-7900 Ang range and at 2.31 Ang/pix dispersion, with the Asiago 1.22m telescope. The spectrum is dominated by a red continuum with minimal photospheric absorption lines and absence of P-Cyg absorptions for all emission lines but OI 7772, for which the absorption is placed at -385 km/s from the photocenter of the emission. All emission lines appear rather sharp, with an average FWHM of about 500 km/s (corrected for instrumental resolution). Compared with the description in ATel #13903 for the July 29.025 UT spectrum taken with SAI 2.5m telescope, in our spectrum 23 hours later the emission in NaI and the P-Cyg absorption in Halpha have gone, and HeI has emerged in emission. The large interstellar extinction is quite evident in the significant strength of Diffuse Interstellar Bands. The integrated absolute flux (erg cm⁻² s⁻¹) of some representative emission lines observed in our spectrum is given in the table.

lambda	line	flux
7772	OI	7.043E-13
6563	Halpha	3.543E-12
5876	HeI	2.154E-14
5682	NII 3	1.360E-14
5169	FeII 42	6.176E-14
4861	Hbeta	2.544E-13
4583	FeII 38	1.545E-14
4340	Hgamma	6.070E-14
4101	Hdelta	2.268E-14

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