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## Nova Cas 2020 (=V1391 Cas) is likely forming dust

ATel #14267; *U. Munari (INAF Padova), D. P.K. Banerjee (PRL, India), F. Castellani, S. Dallaporta, A. Maitan, and A. Vagnozzi (ANS Collaboration)*

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Credential Certification: *U. Munari (ulisse.munari@oapd.inaf.it)*

Subjects: Optical, Nova

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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). Various optical and infrared follow-up observations have been later performed and reported (ATel #13967, #13998, #14004, #14006), describing the subtle variations observed in this nova during the ~3 months it spent fluctuating around maximum. The median values, for such a flat maximum phase, derived from our daily photometric observations collected with various ANS Collaboration telescopes are:

B	V	R	I	B-V	V-R	V-I
13.870	12.271	10.970	9.882	+1.621	+1.278	+2.374

The brightness of the nova has dramatically dropped over the last couple of days with a marked reddening of colors. The presence of a faint and nearby field star, just a few arcsec away from the nova, now requires that the photometry be performed via PSF-fitting. The night values, averaged over PSF-fitting measurements from data that we collected with ANS Collaboration telescopes ID 0310, 0606 and 2202, read:

UT	B	V	R	I
2020 Dec 10.083	16.97	15.26	13.58	12.40
2020 Dec 13.815	19.34	17.55	15.47	14.33
2020 Dec 14.810	19.55	18.03	15.91	14.80

We suggest Nova Cas 2020 is currently forming optically thick dust in its ejecta, an event predicted to occur by Russell et al. (ATel #13967) based on detection of emission from CO in their infrared spectra collected with IRTF on Aug 17.

A low-resolution optical spectrum of Nova Cas 2020 has been obtained with the Asiago 1.22m telescope on Dec 13.811 UT, when the formation of dust was already well underway. The spectrum has a very red slope, and the only emission lines visible are those in the table below, with no P-Cyg absorption present, all showing a narrow profile, and with an integrated absolute flux (erg cm<sup>-2</sup> s<sup>-1</sup>) as given in the last column:

Ang	em. line	flux
4861	Hbeta	3.00E-14
4923	FeII	1.20E-14
5018	FeII	1.14E-14
5169	FeII	9.68E-15
6300	[OI]	6.66E-14
6364	[OI]	2.21E-14

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6563	Halpha	8.69E-13
7772	OI	9.46E-14

IR observations to confirm the condensation of dust in the ejecta and characterize its properties are strongly encouraged.

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R. E. Rutledge, Editor-in-Chief

[rrutledge@astronomerstelegam.org](mailto:rrutledge@astronomerstelegam.org)

Derek Fox, Editor

[dfox@astronomerstelegam.org](mailto:dfox@astronomerstelegam.org)

Mansi M. Kasliwal, Co-Editor

[mansi@astronomerstelegam.org](mailto:mansi@astronomerstelegam.org)