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Photometry and spectroscopy of declining Nova ASASSN-17hx, now passing at t₂

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Subjects: Optical, Nova

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ASASSN-17hx was discovered (Atel #10524) when still >4 mag below and ~41 days before maximum. Spectral classification and pre-maximum evolution have been reported (Atel #10527, #10558, #10572, #10613), as well as the identification in the VVVX survey of a K_s=16.7 mag star as the likely progenitor of the nova, and recently UV observations and an upper limit to X-ray flux obtained with Swift (Atel 10636).

We are continuing an intensive monitoring on Nova ASASSN-17hx with ANS Collaboration photometric telescopes 210 (Atacama, Chile) and 606 (Monte Baldo, Italy), and low-/high-resolution spectroscopy being collected with Varese 0.6m and Asiago 1.22m and 1.82m telescopes.

The nova went through a broad maximum, that appears roughly symmetric in shape when viewed in bolometric optical flux, but with differences in the actual profile going from B to I bands. The peak V-band brightness was reached on July 30.1 UT at B=9.65, V=8.44, R=7.79, and I=7.05. Our last measurement of a few hours ago on Aug 14.8 UT gives B=11.04, V=10.26, R=9.07, and I=8.51, indicating that the nova is quickly approaching t₂ for the V-band. At the current decline rate, t₂ should be passed through around Aug 17.0. The maximum reported in ATel #10572 now appears as a temporary event during the rise toward the true peak.

The optical spectra are still dominated by FeII, with HeI growing in intensity as the decline progresses in a normal fashion. On Aug 12.8 UT spectra, the FeII emission included lines from multiplets 27, 28, 35, 37, 38, 40, 42, 46, 48, 49, 55, 57, 73, and 74 while most prominent HeI lines were 4026, 4471, 5876, 6678, and 7065, the latter with pronounced P-Cyg absorptions as for OI 7772. The profile of Balmer lines is characterized by the presence of a sharp absorption (at heliocentric velocity -250 km/s, and FWHM ranging from 200 km/s for H α to 110 km/s for H δ), superimposed on the emission component that extends at its base from about -1000 to +1000 km/s.

The interstellar NaI D1,D2 doublet appears very complex on our highest resolution Echelle spectra, with each of the two lines identically split into at least 5 distinct components. Applying to their individual equivalent widths the calibration by Munari and Zwitter (1997, A&A 318, 269), the interstellar extinction sums up to E(B-V)=0.62, in good agreement with the E(B-V)=0.68 derived in ATel #10572 from the 6614 Ang diffuse interstellar band.

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