



# X-RAY ASTRONOMY 2019

*Current Challenges and New Frontiers in the Next Decade*

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## The 2017 Outburst of Swift J1357.2-0933: Variable period blue dips with a hot, dense Hell wind

*Friday, 13 September 2019 15:41 (1 minute)*

Quasi-simultaneous optical (ULTRACAM/NTT, SALT), X-ray (NuSTAR, XRT/Swift) and radio(ATCA) observations of the short P, high latitude LMXB transient, Swift J1357.2-0933 during its 2017 outburst have revealed remarkable additional properties. In addition to confirming the variable frequency optical dipping seen during its 2011 discovery outburst, we also find: (1) the dip shape is consistent with partial disc occultations, (2) the source becomes significantly bluer during these dips, indicating an unusual geometry compared to other LMXB dippers, (3) there is no X-ray response to the optical dips, (4) HeII and Balmer absorption is present only during the dips, and is blue-shifted by  $\sim 600 \text{ km s}^{-1}$ . These spectral features imply a very hot ( $T_e \sim 40,000 \text{ K}$ ), dense ( $n \sim 10^{13-14} \text{ cm}^{-3}$ ) outflowing wind driven by a central LX  $\geq 10^{36} \text{ erg s}^{-1}$ . Its periodic visibility implies a very high viewing inclination, and a warped inner disc structure that moves out during the outburst. This is also consistent with its low observed FX/Fopt ratio, implying that it is an Accretion Disc Corona (ADC) source, and not a VFXT (very faint X-ray transient).

This poster represents a summary of results presented in Paice et al 2019 (P19) and Charles et al 2019 (Ch19) - all figures are taken from these papers.

### Topic

Compact and diffuse sources in galaxies and in the Galactic Center

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