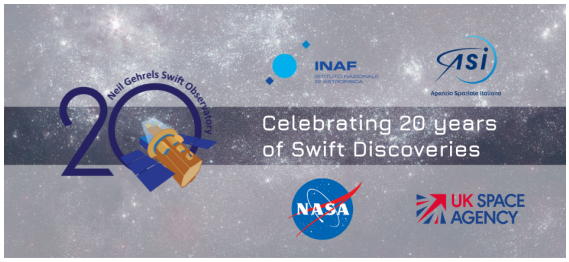

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A tidal disruption event that turned off

Thursday 27 March 2025 17:35 (15 minutes)

Swift has made seminal contributions to the study of tidal disruption events (TDEs), in particular the discovery of three relativistic jetted TDEs and the first intermediate timescale quasi-periodic erupter. In this talk, I will discuss a unique source discovered in archival XRT data that continues this legacy. LSXPS J0956 appears, at first glance, to be a typical thermal X-ray TDE. However, unlike the majority of the sample which decay slowly and can remain luminous for a decade or more, it exhibits a precipitous decline roughly two years after initial detection. Such behaviour has been observed in TDEs before, specifically in jetted TDEs. In contrast to LSXPS J0956, these events display power law spectra, however, viscous-like interactions with the surrounding medium can induce structure in the jet. If viewed slightly off-axis, the varying optical depth could produce the quasi-thermal spectrum observed in LSXPS J0956. Alternatively, if the star's initial orbit is sufficiently eccentric, the entirety of the debris can remain bound to the black hole. The accretion rate decays slowly before dropping rapidly as all the material is accreted, again consistent with the behaviour of LSXPS J0956. I will discuss both these models and their implications for the wider TDE population. Neither of these scenarios have previously been observed in the TDE sample making LSXPS J0956 another first of its kind discovery for *Swift*.

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