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Swift observation of GRS 1736-297

ATel #8704; *A. Bahramian, C. O. Heinke, G. R. Sivakoff (Alberta), T. J. Maccarone (Texas Tech), R. Wijnands (Amsterdam), N. Degenaar (Cambridge)**on 17 Feb 2016; 20:11 UT**Credential Certification: Arash Bahramian (bahramia@ualberta.ca)*

Subjects: X-ray, Binary, Black Hole, Neutron Star, Transient

Referred to by ATel #: [8733](#), [8744](#)

GRS 1736-297 is an X-ray transient near the Galactic center. The source was last detected in outburst in 2006 (ATel #[744](#)). Recently, INTEGRAL detected a new outburst of the source (ATel #[8698](#)). Following this detection, we have observed GRS 1736-297 with Swift/XRT in PC mode on Feb. 15, 2016 for 970 s. Here we report our analysis of this observation.

The source is clearly detected in our observation, with an XRT count rate of ~ 1.6 ct/s, which produced pile-up. Using the UKSSDC XRT online tool, we localize the source to (J2000) RA = 17:39:29.87 and Dec = 29:42:10.7, with a radial uncertainty of 2.2 arcseconds (90% confidence, enhanced position with UVOT astrometry).

GRS 1736-297 is thought to be the counterpart to 1RXS J173930.3-294211 (also known as RX J1739.4-2942) and was classified originally as a low mass X-ray binary (LMXB). Since a Be star is located near the ROSAT source, GRS 1736-297 may instead be a candidate Be/X-ray binary (Motch et al., A&A, 1998, 132, 341). The coordinates derived from our Swift/XRT observations are consistent with the reported coordinates of the ROSAT source (17:39:30.1, -29:42:07, given a radial astrometric precision of $\sim 19''$). However, the proposed Be counterpart (17:39:30.30, -29:42:08.9) is not within our 90% astrometric precision.

Following UKSSDC XRT threads (<http://www.swift.ac.uk/analysis/xrt/pileup.php>), we extracted spectra for the source and background. Fitting the spectrum in XSpec, we found an absorbed powerlaw model fits the spectrum better than an absorbed disk blackbody (reduced chi-squared of 0.9 compared to 1.1 for 41 d.o.f) suggesting the source is currently in a non-thermal state. This powerlaw fit shows a hydrogen column density of $3(+/-0.5)e22$ cm⁻², a photon index of $1.9(+/-0.3)$, and a 0.5-10 keV flux of $3.3(+0.7/-0.4)e-10$ erg/s/cm². The measured photon index is consistent with observations of LMXBs in outburst, and thus provides suggestive evidence supporting an LMXB nature for this source as Be/X-ray binaries tend to show harder spectrum.

Related

- [8744](#) VLA observations indicate GRS 1736-297 is either a black hole X-ray binary or accreting millisecond pulsar
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- [617](#) Swift observations of IGR J17419-2802
- [616](#) New X-ray transient IGR J17419-2802 discovered with INTEGRAL

Further Swift observations of this source have been planned. We thank the Swift team for scheduling our observations.

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