

The Astronomer's Telegram

[Post a New Telegram](#) | [Search](#) | [Information](#)
[Telegram Index](#)

[Obtain Credential To Post](#) | [RSS Feeds](#) | [Email Settings](#)

Present Time: 15 Jan 2014; 16:21 UT

Outside

[GCN](#)
[IAUCs](#)

Other

MacOS: [Dashboard Widget](#)
 Follow ATel on [Twitter](#)
[ATELstream](#)
[ATel Community Site](#)

This space for free for your conference.



[[Previous](#) | [Next](#) | [ADS](#)]

Brightening and hardening of new X-ray transient in globular cluster Terzan 5

ATel #4249; [C. O. Heinke \(U. of Alberta\)](#), [R. Wijnands, D. Altamirano \(U. of Amsterdam\)](#), [D. Pooley \(Sam Houston State U., Eureka Scientific\)](#), [G. R. Sivakoff \(U. of Alberta\)](#)
 on 10 Jul 2012; 21:19 UT
 Credential Certification: [Craig Heinke \(cheinke@virginia.edu\)](#)

Subjects: X-ray, Globular Cluster, Transient

Referred to by ATel #: [4264](#), [4302](#), [5095](#)



We have followed the new X-ray transient in Terzan 5 (ATEL #[4242](#)) with daily Swift/XRT observations, finding it to be continuously brightening. We name this transient as Swift J174805.3-244637, the third confirmed transient in Terzan 5. We observed Terzan 5 with the XRT in PC mode on 2012 July 7 (20:27 UT, 0.95 ks), 8 (23:13 UT, 0.97 ks), and 10 (02:30 UT, 0.76 ks), in each case identifying a single source consistent with the position reported in ATel #[4242](#). Although the count rate of the July 10 observation reached 0.54 cts/s, we did not find any evidence of pileup when comparing the radial count distribution with the known Swift point spread function (see <http://www.swift.ac.uk/analysis/xrt/pileup.php>). We also found no change in the photon index by using spectra from different annuli (2-20 and 4-20 pixel radii) of the last dataset.

We extracted the four Swift/XRT spectra so far from 20 pixel circles, grouped them to 20 cts/bin (except the July 6 observation to 10 cts/bin), and fit them with absorbed power laws (tbabs*pegpwlw) in XSPEC. We find a chi-squared of 35.5 for 37 degrees of freedom. We tied the N_H of all spectra, finding $N_H = 1.8 \pm 0.4 \text{--} 0.3 \times 10^{22} \text{ cm}^{-2}$, consistent with the expected Galactic absorption to Terzan 5. We find absorbed (unabsorbed) 0.5-10 keV flux values of $4 \text{--} 12$ ($1.3 \pm 1.0 \text{--} 0.4 \times 10^{-11}$), $9 \text{--} 12$ ($3 \pm 2 \text{--} 1 \times 10^{-11}$), $1.5 \text{--} 11$ ($4 \pm 2 \text{--} 1 \times 10^{-11}$), and $4.1 \text{--} 11$ ($8 \pm 2 \text{--} 1 \times 10^{-11}$) ergs cm^{-2}/s . For a distance of 5.9 kpc (± 0.5 kpc, Valenti et al. 2007, AJ, 133, 1287), the inferred 0.5-10 keV unabsorbed L_x values are thus $5 \pm 4 \text{--} 1 \times 10^{34}$, $1.2 \pm 0.8 \text{--} 0.3 \times 10^{35}$, $1.7 \pm 1.0 \text{--} 0.4 \times 10^{35}$, and $3.4 \pm 0.9 \text{--} 0.5 \times 10^{35}$ respectively.

We found that the spectrum may have hardened with increasing L_x . If N_H is fixed to the best-fit, the photon index fits are respectively 2.6 ± 0.6 , 2.6 ± 0.4 , 2.4 ± 0.3 , and 2.0 ± 0.2 . An f-test on a spectral fit with or without the photon index held constant gives a 5% chance of attaining the improvement in chi-squared (from 43.4/41 dof, to 35.5/38 dof) by chance. The reverse, spectral softening as a source fades into quiescence, has been seen in several other transients in this L_x range (e.g., Corbel et al. 2006, ApJ, 636, 971; Armas Padilla et al. 2011, MNRAS, 417, 659). We note that this appears to be a rather slow rise, allowing us to obtain unusual detail on the rise at still quite low luminosities.

We have triggered a 10-ks Chandra observation, to occur around July 26, to pinpoint the source position, and are continuing to follow the outburst with Swift. It may be possible to identify the

Related

- 5332 [Report on \(non-\)activity in the Galactic bulge region as seen by INTEGRAL](#)
- 5254 [Swift detection of a third burst from SGR J1745-29](#)
- 5222 [Swift/XRT monitoring observations detect an active X-ray transient near the Galactic center](#)
- 5124 [Swift/BAT detection of a burst from SGR J1745-29](#)
- 5095 [Chandra confirmation of transient X-ray activity from CXOGC J174540.0-290005 north of the Galactic Center](#)
- 5076 [Detection of radio pulsations at 22 GHz from the Magnetar PSR J1745-2900 in the archival data from 2011](#)
- 5074 [Swift/XRT detection of an active X-ray transient near the Galactic center](#)
- 5073 [NuSTAR detection of a transient in outburst north of Sgr A*](#)
- 5070 [Search for pulsed radio emission from PSR J1745-2900 at 1 GHz with the GMRT](#)
- 5064 [Polarisation profiles and rotation measure of PSR J1745-2900 measured at Effelsberg](#)
- 5058 [On-going radio observations of PSR J1745-2900 at Effelsberg, Nancay, and Jodrell Bank: flux density estimates, polarisation properties, spin-down measurement, and the highest dispersion measure measured.](#)
- 5053 [Detection by Sardinia Radio Telescope of radio pulses at 7 GHz from the Magnetar PSR J1745-2900 in the Galactic center region](#)
- 5046 [Spin-down Measurement of PSR J1745-2900: a New Magnetar](#)
- 5043 [Further radio pulsations from the direction of the NuSTAR 3.76-second X-ray pulsar, and a dispersion measure estimate.](#)
- 5040 [Detection of radio pulsations from the direction of the NuSTAR 3.76 second X-ray pulsar at 8.35 GHz](#)
- 5037 [Swift-BAT monitoring for additional bursts from SGR J1745-29 \(Trigger 554491\)](#)
- 5035 [Detection of radio pulsations from the direction of the Galactic center Soft Gamma-ray Repeater with Parkes and](#)

infrared counterpart with adaptive optics observations of this dense and highly reddened cluster, as done for another X-ray transient in Terzan 5 (IGR J17480-2446, see Testa et al., ATEL #[3264](#)).

We thank the Swift team for their support.

	the GBT
5033	Searches for Dispersed Radio Pulsar Emission from the Sag A* SGR
5032	Chandra localization of the soft gamma repeater in the Galactic Center region
5027	Searches for radio pulsations from the 3.76 second NuSTAR X-ray pulsar in the Galactic centre.
5025	Limits on Radio Frequency Flux Density Changes in Sgr A*
5020	NuSTAR discovery of a 3.76 second pulsar in the Sgr A* region
5016	Continued Swift Monitoring of the Galactic Center Flare
5014	Brightening of Sgr A* at 32 GHz from VLA observations
5013	Possible brightening at 22 GHz of Sgr A*
5011	Swift XRT spectrum of transient X-ray source at Sgr A*'s position
5009	Swift/BAT detection of an SGR-like flare from near Sgr A*
5008	Ongoing X-ray activity from Sgr A*
5006	Large Flare from Sgr A* Detected by Swift
4915	Confirmation of GRS 1747-312 as the active transient in Terzan 6
4883	INTEGRAL/JEM-X detection of a possible new outburst from GRS 1747-312
4302	Chandra Identification of the 2012 Transient in Terzan 5
4264	The new X-ray transient Swift J174805.3-244637 in Terzan 5 is a neutron star LMXB
4249	Brightening and hardening of new X-ray transient in globular cluster Terzan 5
4242	A new X-ray transient in the globular cluster Terzan 5
3924	A Candidate Optical Counterpart of IGR J17480-2446 in Terzan 5 identified with the Hubble Space Telescope
3892	Sub-arcsecond position of the the transient 11-Hz X-ray pulsar in the Globular Cluster Terzan 5 derived from a Moon occultation observed by RXTE
3743	Chandra Identification of the 2011 Transient in Terzan 5: Same as the 2000 Transient
3729	MAXI detection of a super-burst from EXO 1745-248 in Terzan 5
3723	Improved Swift-XRT position of the transient source in Terzan 5
3720	Swift and RXTE follow up observations of the transient currently active in the globular cluster Terzan 5
3718	INTEGRAL non detection of renewed activity from Terzan 5
3714	New X-ray transient outburst in Terzan 5

- 3650 [MAXI J0556-332 is a transient neutron-star Z source](#)
- 3264 [A possible IR counterpart to the transient X-ray pulsar IGR J17480-2446 in Terzan 5](#)
- 3225 [Discovery of 10 mHz quasi-periodic oscillations likely from IGR J17091-3624](#)
- 3044 [Terzan 5 transient IGR J17480-2446: return of thermonuclear bursts or were they always there?](#)
- 3000 [Type-II bursts from the new Terzan 5 transient: a GRO J1744-28 analogue?](#)
- 2974 [Chandra Identification of the Transient in Terzan 5: Not the 2000 Transient.](#)
- 2958 [Discovery of mHz QPOs and burst rate evolution in the active Terzan 5 neutron star transient](#)
- 2952 [D. Altamirano \(Amsterdam\), J. Homan \(MIT\), M. Linares \(MIT\), A. Patruno \(Amsterdam\), Y. Yang \(Amsterdam\), A. Watts \(Amsterdam\), M. Kalamkar \(Amsterdam\), P. Casella \(Southampton\), M. Armas-Padilla \(Amsterdam\), Y. Cavecchi \(Amsterdam\), N. Degenaar \(Amsterdam\), D. Russell \(Amsterdam\), R. Kaur \(Amsterdam\), M. van der Klis \(Amsterdam\), N. Rea \(CSIC-IIEC\), R. Wijnands \(Amsterdam\)](#)
- 2946 [A Refined Orbital Solution and the Transient Pulsar in Terzan 5 is Not Eclipsing](#)
- 2940 [INTEGRAL and RXTE spectral analysis of IGR J17480-2446, the new transient in Terzan 5.](#)
- 2939 [A preliminary orbital solution for the transient eclipsing pulsar in Terzan 5](#)
- 2937 [Eclipsing X-ray Burster in Terzan 5: Improved Swift Localization](#)
- 2935 [Discovery of kilohertz quasi-periodic oscillations from EXO 1745-248](#)
- 2933 [The Eclipsing X-ray Burster in Terzan 5 is Probably Not the 2000 Transient](#)
- 2932 [Discovery of 11 Hz burst oscillations from the 11 Hz Eclipsing Pulsar in Terzan 5](#)
- 2929 [EXO 1745-248 is an 11 Hz Eclipsing Pulsar](#)
- 2924 [Further INTEGRAL observations of the transient X-ray burster EXO 1745-248](#)
- 2922 [Swift follow-up observations of EXO 1745-248](#)
- 2920 [Swift-XRT location of the ongoing Terzan 5 outburst](#)
- 2919 [A hard X-ray transient in the direction of Terzan 5 detected by INTEGRAL](#)
- 2139 [New transient LMXB in the globular cluster NGC 6440](#)

[[Telegram Index](#)]

R. E. Rutledge, Editor-in-Chief

Derek Fox, Editor

Mansi M. Kasliwal, Co-Editor

`rrutledge@astronomerstelegam.org`

`dfox@astronomerstelegam.org`

`mansi@astronomerstelegam.org`