Chandra Position of Galactic Center X-ray Transient Swift J174540.7-290015


Publication date
2016

Document Version
Final published version

Published in
The astronomer's telegram

Citation for published version (APA):
Chandra Position of Galactic Center X-ray Transient Swift J174540.7-290015

ATel #8746; F. K. Baganoff, L. R. Corrales, J. Neilsen, M. A. Nowak (MIT), N. Rea (Amsterdam, CSIC-IEEC), F. Coti Zelati (Insubria, Amsterdam, INAF-OAB), D. Haggard (McGill), S. Markoff (Amsterdam), G. Ponti (MPE), G. C. Bower (ASIAA), G. P. Garmire (Huntingdon), on behalf of a larger collaboration on 27 Feb 2016; 19:43 UT

Distributed as an Instant Email Notice Transients Credential Certification: Frederick Baganoff (fkb@space.mit.edu)

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

Referred to by ATel #: 8793, 8881, 9236, 9551

Swift monitoring of the Galactic Center (Degenaar et al. 2015) detected a new X-ray transient, Swift J174540.7-290015, on 2016 February 6 (UTC; ATel #8649). We observed the region with Chandra/ACIS-S twice for 25 ks each beginning at 2016 February 13 08:59:23 and 2016 February 14 14:46:01 (UTC) to continue our monitoring of the GC magnetar SGR J1745-29 (ATel #5222; Pennucci et al. 2015). ACIS-S was operated in single chip (S3), 1/8-subarray mode yielding a frame time of 0.4s. Despite this, the core of the PSF was heavily piled up in the CCD. Filtering on events within the energy range 0.3-8 keV and excluding those within the piled-up core, we calculated the centroid of events within an annulus with inner and outer radii of 2.5 and 9â. The standard deviation of the means in RA and Dec are 0.0145â and 0.0142â. To compute absolute positional errors, we used celldetect to determine the position and uncertainties of SGR J1745-29 and added the uncertainties in quadrature. As a check on the astrometry, we list below the ATCA position of SGR J1745-29 (PSR J1745-2900) from Shannon & Johnston (2013). All uncertainties are 1-sigma. ATCA position of SGR J1745-29 RA (J2000): 17:45:40.164 +/- 0.022  Dec (J2000): -29:00:29.818 +/- 0.090â Chandra position of SGR J1745-29 RA (J2000): 17:45:40.164 +/- 0.3430â Dec (J2000): -29:00:29.82 +/- 0.3260â Chandra position of Swift J174540.7-290015 RA (J2000): 17:45:40.664 +/- 0.3433â Dec (J2000): -29:00:15.61 +/- 0.3263â Reynolds et al. (ATel #8649) note two cataloged CXO sources, CXOU J174540.1-290016 and CXOGC J174540.0-290014, that lie just outside Swiftâ s 2.2â error radius (90%). We find that no previous CXO source in the catalog of Munoz et al. (2009) is associated with the new transient and we have not detected the source in subsequent Chandra monitoring, until now. We confirm that Swift J174540.7-290015 is a previously

Related
13839 Renewed activity of the Galactic center transient Swift J174535.5-285921 seen with Swift/XRT
13683 Swift/XRT detects a new outburst of the Galactic Center transient GRS 1741.9-2853
13453 Swift/XRT detects (continued) activity of the Galactic center transient AX J1745.6-2901
13150 Swift/XRT detects a new outburst of the Galactic center transient AX J1745.6-2901
11263 Swift resumes X-ray monitoring observations of the Galactic center in 2018
10900 Swift/XRT detects activity of a very-faint X-ray transient, likely the neutron star X-ray binary AX J1745.6-2901, near Sgr A*
10859 Swift/XRT detects a new accretion outburst of the Galactic center neutron star transient GRS 1741-2853
10671 MAXI/GSC detection of a weak X-ray outburst from RX J1709.5-2639 (XTE J1709-267)
10323 Swift/XRT detects renewed activity of the Galactic center transient AX J1745.6-2901
10089 Swift resumes X-ray monitoring observations of the Galactic center in 2017
9551 Swift/XRT detects renewed activity of the Galactic center X-ray transient XMM J174457-2850.3
9236 Swift/XRT detects renewed activity of the Galactic center X-ray transient Swift J174535.5-285921
9196 Continued Swift/XRT observations of the new Galactic center transients Swift J174540.2-290015 and
unknown transient X-ray source. For the CXO catalog, we designate the new transient as CXOGC J174540.6-290015. The two nearest known X-ray transients, CXOGC J174545.0-290005 and CXOGC J174541.0-290014 (Muno et al. 2005), are currently in quiescent states that would not contaminate the spectrum and flux measured by Swift. AX J1745.6-2901 is the only transient currently bright enough to contaminate the INTEGRAL observation (#8684). The outbursts of SGR J1745-29 and SWIFT J174540.7-290015 within the past three years have added two new faint X-ray transients to the four known to lie within 0.5° of Sgr A*. The rate of discovery of faint X-ray transients within this region since 1999 September 21 (UTC) is 0.37 +/- 0.15 per year, indicating that Swift, Chandra and XMM-Newton monitoring are likely to discover a significant number of new faint X-ray transients in this region over the next decade. ATels #8689 and #8737 report the positions of three ISPI catalog (DeWitt et al. 2010) and one VVV catalog (Minniti et al. 2010) NIR point sources that may be associated with the new transient based on the Swift error circle. ISPI 527175 and 540591 are firmly excluded by our improved Chandra position. ISPI 522271 is disfavored. Both ISPI 575458 and the VVV source lie northeast of the Chandra position with error circles overlapping that of Chandra and of each other. However, an unpublished K-band image taken with the PANIC camera on the 6.5-m Magellan Baade Telescope shows multiple overlapping NIR sources that are spatially coincident with these two sources. High angular resolution NIR imaging with an AO system will be required to clearly identify the NIR counterpart. A joint timing search of both Chandra datasets found no significant periodicity above 0.9s. References: Degenaar et al. 2015, JHEAp, 7, 137 DeWitt et al. 2010, ApJ, 721, 1663 Minniti et al. 2010, New Astron., 15, 433 Muno et al. 2005, ApJ 622, L113 Muno et al. 2009, ApJ, 181, 110 Pennucci et al. 2015, ApJ, 808, 81, 15 Shannon & Johnston 2013, MNRAS, 435, L29
Effelsberg
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.

Detection by Sardinia Radio Telescope of radio pulses at 7 GHz from the Magnetar PSR J1745-2900 in the Galactic center region

Spin-down Measurement of PSR J1745-2900: a New Magnetar

Further radio pulsations from the direction of the NuSTAR 3.76-second X-ray pulsar, and a dispersion measure estimate.

Detection of radio pulsations from the direction of the NuSTAR 3.76 second X-ray pulsar at 8.35 GHz

Swift-BAT monitoring for additional bursts from SGR J1745-29 (Trigger S545491)

Detection of radio pulsations from the direction of the Galactic center Soft Gamma-ray Repeater with Parkes and the GBT

Searches for Dispersed Radio Pulsar Emission from the Sag A* SGR

Chandra localization of the soft gamma repeater in the Galactic Center region

Searches for radio pulsations from the 3.76 second NuSTAR X-ray pulsar in the Galactic centre.

Limits on Radio Frequency Flux Density Changes in Sgr A*

NuSTAR discovery of a 3.76 second pulsar in the Sgr A* region

Continued Swift Monitoring of the Galactic Center Flare

Brightening of Sgr A* at 32 GHz from VLA observations

Possible brightening at 22 GHz of Sgr A*

Swift XRT spectrum of transient X-ray source at Sgr A*'s position

Swift/BAT detection of an SGR-like flare from near Sgr A*

Ongoing X-ray activity from Sgr A*

Large Flare from Sgr A* Detected by Swift

Transient X-ray burster KS 1741-293 active again

1E 1740.7-2942 (the Great Annihilator) enters a low-intensity state

IR counterpart candidates to the transient Swift J174535.5-285921 - UPDATE

Chandra Localization of the Galactic Center X-ray Transient Swift J174535.5-285921

The Galactic center transient Swift J174535.5-285921 has returned to quiescence

IR counterpart candidates to the transient Swift J174535.5-285921

Search for an IR counterpart to the newly discovered transient Swift J174535.5-285921

Swift/XRT discovers a new X-ray transient near the
2770 Swift/XRT detects new outbursts of the galactic center X-ray transients GRS 1741-2853 and XMM J174457-2850.3

1513 Chandra detects Swift J174535.5-290135.6 in a relatively bright state

904 Announcement of the Swift/BAT Hard X-ray Transient Monitor

753 Swift/XRT detection of a transient source in the Galactic Center

[ Telegram Index ]

R. E. Rutledge, Editor-in-Chief
Derek Fox, Editor
Mansi M. Kasliwal, Co-Editor

rrutledge@astronomerstelegram.org
dfox@astronomerstelegram.org
mansi@astronomerstelegram.org