New Galactic Center X-ray Transient Detected by Swift

SWIFT J174540.7-290015

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New Galactic Center X-ray Transient Detected by Swift: SWIFT J174540.7-290015

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We report on our ongoing Swift monitoring observations of the Galactic center (Degenaar et al. 2015). In the first Swift observation after the GC exited the solar constraint window, a new X-ray source is detected in a ~1ks observation on MJD 57424.87742 (t_start: 160206 @21:02UT), at a position of

RA (J2000): 17 45 40.74 (266.41974)
Dec (J2000): -29 00 14.7 (-29.00407)
90% Error radius: 2.2"

This lies approximately 16" to the north of Sgr A* and the magnetar SGR J1745-29. This observation also reveals the eclipsing neutron star transient AX J1745.6-2901 (Degenaar & Wijnands 2009, 2010) to remain active over 2.5yrs since the onset of the current outburst (ATEL #5222, #5226).

Extracting a spectrum from a circular region (r=20") centered on this source and background from an annular region 28"-37" from the source position, we measure a net count rate of 0.50±0.02 ct/s. Assuming a constant column of \( N_H = 9.1\times10^{22} \) cm\(^{-2}\), the resulting spectrum is equally well characterized by both a power-law (\( \gamma = 0.60±0.26 \)) and blackbody (\( kT = 2.1±0.4-0.3 \) keV, norm=0.9±0.4-0.3, implying an emission radius of approx. 1.2 km at 8 kpc) model. Assuming a distance of 8 kpc, the source luminosity is \( 7.9\times10^{35} \) erg/s (2 - 10 keV). The observed spectrum would favor a transient accreting neutron star or magnetar interpretation for this source. The observed spectral shape is inconsistent with that observed from a typical accreting black hole.

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Inspection of the source lightcurve does not reveal the presence of pulsations, though the observation was acquired in PC mode (delta_t = 2.5s), thus limiting our ability to detect rapid coherent pulsations.

We note the presence of two catalogued CXO sources in the immediate vicinity of this source. CXOU J174540.1-290016 CXOGC J174540.0-290014

Chandra observations have determined CXOGC J174540.0-290014 to be a (very-faint) X-ray transient (Muno et al. 2005). However, at the current time, we cannot firmly associate this source with either of the above sources and as such it is possible that the detected source is a newly active Galactic center transient, which we designate SWIFT J174540.7-290015.

Follow-up observations are encouraged to determine the nature of this source.

The Swift/XRT Galactic Center monitoring campaign website can be found at: http://www.swift-sgra.com

References:
Degenaar & Wijnands 2009, A&A 495, 547
Degenaar & Wijnands 2010, A&A 524, 69
Degenaar et al., 2015, JHEAp, 7, 137

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

Chandra detects activity from the Galactic X-ray transients KS 1741-293, Swift J174535.5-290135.6 and CXOGC J174535.5-290124

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

Long duration outbursts from the two X-ray bursters AX J1745.6-2901 and GRS 1741.9-2853 suggested by XMM-Newton observations

Renewed activity of the Galactic center transients Swift J174535.5-290135.6 and GRS 1741.9-2853 as observed with Swift/XRT

Two active X-ray transients in the Galactic Center region as seen by INTEGRAL

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

Renewed activity of the very faint X-ray transient CXOGC J174535.5-290124 and continued activity of the neutron-star X-ray transient SAX J1747.6-2853

INTEGRAL detects SWIFT J174535.5-290135.6

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

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