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Swift/XRT monitoring observations detect an active X-ray transient near the Galactic center

ATel #5222; *N. Degenaar (Michigan), R. Wijnands (UvA), M. T. Reynolds, J. M. Miller (Michigan), J. A. Kennea (PSU) and N. Gehrels (GSFC), on behalf of a larger collaboration on 23 Jul 2013; 13:09 UT*

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We report on ongoing daily X-ray monitoring observations of the Galactic center with the Swift/XRT (ATel #5006; see link below). In addition to continued activity of the magnetar SGR J1745-29 (ATels #5009, #5016, #5020, #5032, #5037, #5046, #5053; Kennea et al. 2013; Mori et al. 2013), a transient X-ray source located ~ 1.5 arcmin south-east of Sgr A* has become active. This object is first detected during a ~ 1.0 ks PC mode observation performed on 2013 July 18, at a net count rate of $\sim 1\text{E-}2$ counts/s. In the subsequent observation obtained on July 22 (~ 0.9 ks), the source has brightened to $8\text{E-}2$ counts/s. No activity is seen at this position during previous Swift/XRT observations in 2013.

We combined the two XRT observations to extract an average X-ray spectrum. The spectral data can be described by an absorbed power-law model with $\text{NH} \sim 1\text{E}23$ cm $^{-2}$ and a photon index of ~ 1.9 . The resulting absorbed (unabsorbed) 2-10 keV flux is $1.2\text{E-}11$ ($2.3\text{E-}11$) erg/cm 2 /s. Assuming a distance of 8 kpc, the corresponding 2-10 keV luminosity is $\sim 1.4\text{E}35$ erg/s.

Using the online XRT data product tools (Evans et al. 2009), we determine a PSF-fitted position of R.A. = 17:45:36.42 and Dec. = -29:01:31.7 (J2000), with an uncertainty of 3.7" (90% confidence). These coordinates are $\sim 10''$ from that of the transient neutron star low-mass X-ray binary AX J1745.6-2901 and $\sim 13''$ from that of the unclassified very-faint X-ray transient CXOGC J174535.5-290124. Both are recurrent transients that have frequently been seen active with Swift/XRT in the past years (Degenaar & Wijnands 2009, 2010). AX J1745.6-2901 exhibits type-I X-ray bursts and displays X-ray eclipses that indicate a binary orbital period of ~ 8.4 hr (Maeda et al. 1996). Its outbursts typically last for several months and reach up to a 2-10 keV luminosity of a few times $1\text{E}35$ - $1\text{E}36$ erg/s (assuming a distance of 8 kpc). CXOGC J174535.5-290124 has been seen active for months at a time as well, but never brighter than $\sim 1\text{E}35$ erg/s.

We tentatively associate the currently active transient with AX J1745.6-2901, but renewed activity from CXOGC J174535.5-290124 can not be excluded. Alternatively, Swift/XRT may have detected a new, previously unknown X-ray transient. Swift/XRT observations are ongoing and may allow us to distinguish between these different possibilities.

The Swift/XRT Monitoring Campaign Website can be found at: <http://www.swift-sgra.com>

References:

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