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**Swift/XRT detection of another active X-ray transient close to Sgr A\***

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## Swift/XRT detection of another active X-ray transient close to Sgr A\*

ATel #9109; *N. Degenaar (Cambridge), M. T. Reynolds (U. of Michigan), R. Wijnands (U. of Amsterdam), J. M. Miller (U. of Michigan), J. A. Kennea (PSU), G. Ponti (MPE), D. Haggard (McGill), and N. Gehrels (GSFC), on behalf of a larger collaboration*  
on 2 Jun 2016; 14:07 UT

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Subjects: Radio, X-ray, Request for Observations, Binary, Black Hole, Neutron Star, Transient

Referred to by ATel #: [9152](#), [9196](#), [9236](#), [9551](#), [10859](#), [13683](#)

Daily monitoring observations of the Galactic center performed with the Swift/XRT (Degenaar et al. 2015) have revealed activity of a new X-ray transient located  $\sim 10''$  South of Sgr A\*. This object is clearly detected during three consecutive  $\sim 0.9$  ks PC mode observations performed on 2016 May 28 and 30, and June 1. The 0.3-10 keV count rate has risen from  $\sim 2E-2$  to  $\sim 0.1$  counts/s between those observations.

Using the tool `xrtcentroid`, we determine a position of R.A. = 17:45:40.26 and Dec. = -29:00:37.85 (J2000), with an uncertainty of 3.7" (90% confidence). This position is  $\sim 7.7''$  from that of the known X-ray transient CXOGCJ174540.0-290031, which was active in 2004-2005. This object showed 7.9 hr X-ray eclipses and was proposed to be a candidate black hole low-mass X-ray binary (LMXB) based on its bright radio counterpart (Bower et al. 2005; Muno et al. 2005ab; Porquet et al. 2005). Given that the position of CXOGCJ174540.0-290031 is outside the 90% XRT error circle and that there are no other known transient X-ray sources consistent with the XRT localization, we tentatively designate the newly active transient SWIFT J174540.2-290037.

The X-ray spectrum of SWIFT J174540.2-290037 extracted from the most recent observation (ObsIDs 92236058) can be described by an absorbed power-law model with  $N_H = (2.2 \pm 0.8)E23$  cm $^{-2}$  and a photon index of  $\sim 1.7 \pm 1.0$  (1-sigma errors). The resulting unabsorbed 2-10 keV flux is  $\sim (7 \pm 2)E-11$  erg/cm $^2$ /s. For a fiducial distance of 8 kpc, this translates into a 2-10 keV luminosity of  $\sim 5E35$  erg/s.

Apart from this new transient, there are two other X-ray sources active within the Swift/XRT field of view. The first is the unclassified transient that was discovered earlier this year and has

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remained active since, SWIFT J174540.7-290015 (ATel #8649). We note that this transient is likely responsible for the hard X-ray activity recently detected with INTEGRAL (ATel #9000). We also detect ongoing activity of the neutron star LMXB AX J1745.6-2901, which started its prolonged accretion outburst in 2013 July (Degenaar et al. 2015; Ponti et al. 2015). The neutron star LMXB GRS 1741-2853, which entered a new accretion outburst around 2016 March 23 (ATel #8881), has not been detected by the XRT since 2016 May 1.

Follow-up observations, particularly at radio wavelengths, are encouraged to determine the nature of the newly active transient X-ray source SWIFT J174540.2-290037 and whether it can possibly be associated with the transient candidate black hole LMXB CXOGCJ174540.0-290031.

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

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