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Swift/XRT detects a new outburst of the Galactic Center transient AX J1745.6-2901

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Swift/XRT detects a new outburst of the Galactic Center transient AX J1745.6-2901

ATel #13150; *N. Degenaar (U. of Amsterdam), R. Wijnands (U. of Amsterdam), M. T. Reynolds (U. of Michigan), J. M. Miller (U. of Michigan), J. A. Kennea (PSU), on behalf of a larger collaboration*

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Referred to by ATel #: [13453](#)

Our daily Swift/XRT monitoring observations of the Galactic Center (Degenaar et al. 2015, JHEAp, 7, 137) show X-ray activity of a transient source located $\sim 1.5'$ to the south-east of Sgr A*. This object is clearly detected in individual XRT images since September 17 (obs ID 00095329145), with a count rate of ~ 0.04 - 0.12 c/s.

Using the tool `xrtcentroid` on a combined image of the 13 observations taken between September 17 and 29 (obsID 00095329145-157), we determine that the position of the transient is RA = 17:45:36.16, DEC = -29:01:33.24 (J2000) with a 90% confidence error of $3.6''$. These coordinates are consistent with the Chandra localisation (ATel #1513) of the 8.4-hr eclipsing low-mass X-ray binary and thermonuclear X-ray burster AX J1745.6-2901. We thus conclude that we have likely detected a new outburst of this transient.

We extracted an average spectrum from the above mentioned observations. This spectrum can be described by an absorbed power-law model with an index of 2.4 ± 0.4 and a hydrogen column density of $(2.0 \pm 0.3) \times 10^{23} \text{ cm}^{-2}$ (1-sigma errors). The inferred 2-10 keV unabsorbed flux for this fit is $(3.7 \pm 0.9) \times 10^{-11} \text{ erg cm}^{-2} \text{ s}^{-1}$, which translates into a luminosity of $\sim 3 \times 10^{35} \text{ erg/s}$ at a distance

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of 8 kpc.

AX J1745.6-2901 is very frequently active: our monitoring program previously detected outbursts from this system in 2006, 2007-2008, 2010 (e.g. Degenaar et al. 2015), 2013-2016 (e.g. ATels #5226, #9196), and two in 2017 (ATels #10323, #10900). The years-long outbursts that occurred in 2007-2008 and 2013-2016 reached a peak luminosity of several times E36 erg/s. All the other outbursts had a shorter duration (months) and a lower peak luminosity of a few times E35 erg/s. It seems that the current outburst belongs to the latter class.

Daily Swift/XRT monitoring of the Galactic Center is ongoing and the results of new observations are automatically posted on <http://www.swift-sgra.com>.

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