Re-brightening of Galactic Center X-ray Transient AX J1745.6-2901

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Re-brightening of Galactic Center X-ray Transient AX J1745.6-2901

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on ***29 Jun 2023; 18:44 UT***
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Subjects: Radio, Infra-Red, X-ray, Neutron Star, Transient

Referred to by ATel #: 16436, 16642

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We report on our ongoing Neil Gehrels Swift Observatory monitoring observations of the Galactic center (Degenaar et al. 2015). In a recent observation (obsid: 00096991050), a transient X-ray source is detected at a position consistent with that of the known eclipsing and bursting X-ray transient AX J1745.6-2901 (atel #14788, #13453, #13150, #10323, #9551). This observation was taken on MJD 60122.76669 (Tstart: 2023 June 28 @18:23UT) and had a duration of ~0.8ks. This source lies approximately 1.5' southwest of Sgr A*.

A spectrum is extracted from a circular region (r=18") centered on this source and background from an annular region 30"-50" around the source position. In order to characterize this source, spectral fits were carried out in Xspec, utilizing the c-statistic. We measure a net 2.0 - 10.0 keV count rate of 0.12 +/- 0.01 ct/s. All quoted uncertainties are at the 1-sigma confidence level.

Assuming a powerlaw continuum, we measure:
N_H = (21.7 +/- 10.5)e22 cm^-2
Gamma = 1.04 +/- 1.0
Flux = (3.4 +0.1 -1.6)e-11 erg/s/cm^2 (2.0-10.0 keV, observed)

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10089 Swift resumes X-ray monitoring observations of the Galactic center in 2017
9551 Swift/XRT detects renewed

cstat/dof = 67.6/85

Assuming a blackbody continuum, we measure:
N_H = (13.8 +/- 6.5)e22 cm^-2
kT_bbrad = (2.6 +1.7 -0.7) keV
Flux = (3.6 +0.2 -1.7)e-11 erg/s/cm^2 (2.0-10.0 keV, observed)
cstat/dof = 69.5/85

At a distance of 8 kpc, the observed luminosity (Lx ~ 2e35 erg/s) indicates a new active phase for this transient. We note that there is evidence for the source in our previous observations on 2023 June 08/07 at an observed flux of ~2e-12 erg/s/cm^2 (2.0-10.0 keV, for an assumed powerlaw with gamma=1.8). AX J1745.6-2901 was not detected on 2023 June 6th or in the weeks prior (fx < 1e-12 erg/s/cm^2 -- 2.0-10.0 keV).

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

References:
Degenaar et al., 2015, JHEAp, 7, 137

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