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Publication date

2015

Document Version

Final published version

Published in

The astronomer's telegram

[Link to publication](#)

Citation for published version (APA):

Degenaar, N., Wijnands, R., Reynolds, M. T., Miller, J. M., Kennea, J. A., & Gehrels, N. (2015). Swift resumes X-ray monitoring observations of the Galactic center. *The astronomer's telegram*, 7023. <http://www.astronomerstelegam.org/?read=7023>

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Swift resumes X-ray monitoring observations of the Galactic center

ATel #7023; *N. Degenaar (University of Cambridge), R. Wijnands (University of Amsterdam), M. T. Reynolds (University of Michigan), J. M. Miller (University of Michigan), J. A. Kennea (Penn State University), N. Gehrels (Goddard Space Flight Center), on behalf of a larger collaboration*

on 3 Feb 2015; 21:44 UT

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Subjects: X-ray, Black Hole, Neutron Star, Transient

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On 2015 February 3, Swift resumed its daily X-ray monitoring campaign of the Galactic center (Atel #5006; see link below).

The only active X-ray source in the ~ 0.9 ks XRT image is the transient neutron star low-mass X-ray binary AX J1745.6-2901. This source entered an accretion outburst in 2013 July and remained active since (e.g., ATels #5226, #5847; Degenaar et al. 2014; Ponti et al. 2015). The source spectrum, extracted using the online XRT data product tools (Evans et al. 2009), can be described by an absorbed power-law model with a hydrogen column density of $(2.3 \pm 0.7) \times 10^{23}$ cm $^{-2}$ and a photon index of 2.2 ± 0.7 . The inferred unabsorbed 2-10 keV flux of $(6.3 \pm 0.7) \times 10^{-10}$ erg/cm 2 /s corresponds to a luminosity of $(4.8 \pm 0.6) \times 10^{36}$ erg/s for a distance of 8 kpc. The current intensity is similar to that observed in 2013-2014, so there is no indication that the outburst is ceasing.

We detect no X-ray activity from the location of Sgr A* and the nearby transient magnetar SGR J1745-29 (e.g., ATels #5009, #5020, #5032; Kennea et al. 2013; Mori et al. 2013; Rea et al. 2013). Within a 10" circular extraction region centered on the radio position of Sgr A* we measure an XRT count rate of $\sim 2.0 \times 10^{-2}$ counts/s. This is not significantly higher than the average intensity of the persistent (diffuse) emission at this location in 2006-2011 ($\sim 1.1 \times 10^{-2}$ counts/s; Degenaar et al. 2013). The extracted brightness is consistent with the fading seen for SGR J1745-29 in 2014. The estimated 2-10 keV luminosity upper limit for both the magnetar and the supermassive black hole is $\sim 2 \times 10^{34}$ erg/s (uncorrected for absorption, assuming a distance of 8 kpc).

Daily X-ray observations of the Galactic center are continuing and updates are immediately posted at the [Swift Sgr A* Monitoring Campaign Website](#).

References:

Degenaar et al. 2013, ApJ 769, 155
Degenaar et al. 2014, IAUS 303, 315
Evans et al. 2009, MNRAS 397, 1177
Kennea et al. 2013, ApJ 770, L24
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Ponti et al. 2015, MNRAS 446, 1536

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