Swift resumes X-ray monitoring observations of the Galactic center
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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

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

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+/-0.7)E23 cm^{-2} and a photon index of 2.2+/-0.7. The inferred unabsorbed 2-10 keV flux of (6.3+/-0.7)E-10 erg/cm^{2}/s corresponds to a luminosity of (4.8+/-0.6)E36 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 ~2.0E-2 counts/s. This is not significantly higher than the average intensity of the persistent (diffuse) emission at this location in 2006-2011 (~1.1E-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 ~2E34 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. 2014, IAUSS 303, 315
Ponti et al. 2015, MNRAS 446, 1536

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- Search for pulsed radio emission from PSR J1745-2900 at 1 GHz with the GMRT
- Polarisation profiles and rotation measure of PSR J1745-2900 measured at Effelsberg
- On-going radio observations of PSR J1745-2900 at Effelsberg, Nancay, and Jodrell Bank: flux density estimates, polarisation properties, spin-down measurement, and the highest dispersion measure measured.
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