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Activity of IGR J17445-2747 and SAX J1747.0-2853 in the Swift Bulge Survey

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Activity of IGR J17445-2747 and SAX J1747.0-2853 in the Swift Bulge Survey

ATel #10265; *Heinke, C. O., Bahramian, A., Maccarone, T., inâ t Zand, J., Kennea, J., Kuulkers, E., Degenaar, N., Shaw, A. W., Sivakoff, G. R., Strader, J., and Wijnands, R. on 13 Apr 2017; 17:25 UT*

Credential Certification: Craig Heinke (cheinke@virginia.edu)

Subjects: X-ray, Neutron Star, Transient

Referred to by ATel #: [10272](#), [10273](#), [10284](#), [10305](#), [10355](#), [10395](#), [10419](#), [12751](#)

We have recently initiated the Swift Bulge Survey, a wide and shallow Swift/XRT imaging survey of 16 square degrees of the Galactic Bulge around the Galactic Center, to be performed every other week for 15 epochs when the Galactic Bulge is visible. Each Swift exposure is 60 seconds long, reaching a 0.5-10 keV limiting depth of $1e35$ erg/s at the Galactic Center, enabling detection of fainter transients than in previous surveys. Our first Swift observations are taking place on April 13, 2017. Here we report detections of two known transients.

IGR J17445-2747 is a transient previously seen in outburst for about 30 days with INTEGRAL, reaching a peak 20-100 keV flux of 30 mCrab or $4.6e-10$ ergs/cm²/s (Bird et al. 2010, ApJS, 186, 1; Malizia et al. 2010, MNRAS, 408, 975). It has not been clearly associated with a counterpart at lower luminosities (e.g. Landi et al. 2007, Atel#[1273](#); Tomsick et al. 2008, ApJ, 685, 1143; Malizia et al. 2010, MNRAS, 408, 975), with the most likely association being with the XMM-Newton Slew Survey source XMMSL1 J174429.4-274609, at a 0.2-12 keV flux of $1.6e-12$ ergs/cm²/s (Malizia et al. 2010). We report a detection with Swift/XRT of a 10-count source at J2000 coordinates 266.12868, -27.76732 (=17:44:30.88, -27:46:02.4), with error radius 7.5" (90% confidence, though this may be underestimated as the slew may not have fully settled for the observation). We do not detect it in our simultaneous UVOT observation (uvm2 filter), implying the source is located at a distance of at least several kpc. Our Swift detection is 21" from the XMM Slew detection, farther than the combined 9" formal errors from the two surveys, but it seems plausible that the XMM-Newton and Swift sources are associated. The Swift inferred intrinsic 0.5-10 keV flux (for the Galactic $N_H=1e22$, assuming a power-law with photon index 1.7) is $1.7e-11$ ergs/cm²/s, or an X-ray luminosity of $1.3e35$ erg/s if located at 8 kpc. A thermonuclear burst was observed from IGR J17445-2747 on April 10th by INTEGRAL/JEM-X (Mereminskiy et al. 2017, Atel#[10256](#)), indicating that this transient is a neutron star, and that its outburst has lasted at least 3 days. A longer Swift observation of this object is scheduled for April 14th.

SAX J1747.0-2853 (aka 1A 1743-288) is a known transient (Werner et al. 2004, A&A 416, 311), which has been repeatedly detected in recent years by INTEGRAL JEM-X and MAXI, including recent activity continuing since 2016 at the level of 8 and 6 mCrab in 3-10 and 10-25 keV,

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respectively (Chenevez et al. 2016, Atel#9387; Clavel et al. 2017, Atel#9115). We detect it at a countrate of 2.7 counts/s, suggesting significant pile-up and (for $N_H=8.8e22$, Werner et al. 2004) an unabsorbed 0.5-10 keV flux greater than $8.5e-10$ ergs/cm²/s (for 8 kpc, $L_X > 6.5e36$ erg/s). We also detect the known persistent source 1E 1743.1-2843 (e.g. Lotti et al. 2016, ApJ, 822, 57), at a countrate of 0.4 cts/s, which for $N_H=1.3e23$ (Lotti et al. 2016) gives an estimated unabsorbed 0.5-10 keV flux of $1.7e-10$ ergs/cm²/s (for 8 kpc, $L_x=1.3e36$ erg/s).

We thank the Swift team for their support of these observations, which are ongoing.

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|-------------|----------------------------------------------------------------------------------------------------------------|
| | 331 and XTE J1810-189 |
| 1508 | On the infrared counterpart to XTE J1810-189 |
| 1490 | Chandra Positions for the Neutron Star X-ray Transients XTE J1810-189 and SAX J1750.8-2900 |
| 1472 | A candidate near-infrared counterpart to SAX J1750.8-2900 |
| 1446 | NIR counterparts in the Swift error circles of the active transients SAX J1750.8-2900 and XTE J1810-189 |
| 1441 | Further Swift observations of XTE J1810-189 |
| 1273 | Swift/XRT observations of INTEGRAL sources |

[**Telegram Index**]

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