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Swift Bulge Survey detections of the X-ray transients SAX J1750.8-2900 and IGR J17445-2747

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Swift Bulge Survey detections of the X-ray transients SAX J1750.8-2900 and IGR J17445-2747

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on 13 May 2019; 17:02 UT

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Subjects: X-ray, Neutron Star, Transient

Referred to by ATel #: [12843](#), [12932](#), [12960](#)

We have begun a second installment of our Swift Bulge Survey (Atels #[10265](#), #[10273](#), #[10305](#), #[10355](#), #[10419](#), #[10422](#), #[10428](#)), a rapid shallow mapping of ~16 square degrees of the Galactic Bulge. Each tile is observed for 120 seconds with the XRT and UVOT aboard the Neil Gehrels Swift satellite, enabling X-ray sensitivity down to $4\text{--}10e34$ erg/s, depending on extinction, for sources near the Galactic Center. A two-week cadence (when Swift planning allows) enables the detection of very faint X-ray transients as far as the Galactic Bulge. Our first three sets of observations in 2019 were taken on April 4, April 18, and May 8-9.

We report the detection of SAX J1750.8-2900 in each epoch, with 0.5-10 keV unabsorbed fluxes rising from $3.2e\text{--}11$ (April 4), to $2e\text{--}10$ (April 18), to $7e\text{--}10$ ergs/cm²/s (May 9, 2019), assuming an absorbed power-law with $N_{\text{H}}=3e22$ and photon index 2 (e.g. Atel #[1490](#)). SAX J1750.8-2900 was last seen in Sept. 2018 by INTEGRAL (Atel #[12048](#)), and there have been no further observations until our April 4 observation. Its previous outbursts have tended to last years (see Parikh & Wijnands 2017, MNRAS, 472, 2742), but the rapid rise we observe suggests that this is the beginning of an outburst, not a continuation of the 2018 outburst.

In our May 8 observation set, we detect a new outburst of IGR J17445-2747 (Atel #[10256](#), #[10265](#), #[10272](#), #[10273](#), #[10305](#), #[10395](#)), a known X-ray burster (Mereminsky et al. 2017, Astr. Lett., 43, 656) with a likely giant star companion (Shaw et al. in prep). We detect 5 photons in a 122 s exposure, suggesting an X-ray flux $F_{\text{X}}(0.5\text{--}10$ keV, unabsorbed) $\sim 1e\text{--}11$ ergs/cm²/s for $N_{\text{H}}\sim 6e22$, photon index=2, and thus, for an 8 kpc distance, $L_{\text{X}}\sim 7e34$ ergs/s. In our two April 2019 observations, there are no photons within 2' of IGR J17445-2747, suggesting

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a 1-sigma upper limit of $F_X < 1.8e-12$ ergs/cm²/s, or $L_X < 1.3e34$ erg/s. This source had not been detected since an outburst recorded by INTEGRAL and our prior Swift Bulge Survey observations, which was observed until May 13, 2017.

Our Swift/XRT survey will continue biweekly through Sept. 2019. We thank the Swift team for their support of these observations.

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