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*on **21 Jun 2018; 02:52 UT***
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Subjects: X-ray, Globular Cluster, Neutron Star, Transient

Liller 1 is a Galactic globular cluster hosting the transient neutron star low-mass X-ray binary (LMXB) known as the Rapid Burster (MXB 1730-335). Recent Swift and Chandra observations in late April 2018 identified a new transient X-ray binary in this cluster (CXOU J173324.6-332321, hereafter Liller 1 X-2, ATel #11598) and radio/X-ray follow up observations with VLA and Swift indicated that this new transient is likely a neutron star LMXB as well (ATel #11646).

We have continued monitoring Liller 1 weekly with Swift/XRT. The outburst from X-2 peaked at an XRT count rate of ~1 ct/s (in the 0.3-10 keV band) on May 17th, 2018 (ObsID 31360148) and we observed the decay in the subsequent observations until June 11th, 2018. We estimate a Swift/XRT count rate of ~0.006 ct/s (0.3-10 keV) in observation on June 11th, 2018 (ObsID 31360155). This rate appears to be consistent with the expected Swift/XRT rate from Liller 1 when all of its sources are in quiescence.

However, a short (200 s) Swift/XRT observation on June 18th, 2018 (ObsID 31360156) indicated a count rate of ~10 ct/s (0.3-10 keV) from the direction of Liller 1. Since this observation was in PC mode, pile up and the short exposure made it difficult to characterize the X-ray light curve and spectrum. We thus requested a longer follow up XRT observation that would be performed in WT mode. In this follow up observation on June 19th, 2018 (ObsID 31360157) we clearly detect two Type II X-ray bursts and thus identify the Rapid Burster as the source currently in outburst in Liller 1.

Outside of the two type II bursts, we see a typical XRT count rate of 10 cts/s, dipping slightly before the bursts. The first burst starts 250 s into the observation, and increases within 3 seconds to ~200 ct/s. After 50 s, it declines quickly to ~80 ct/s, where it remains for ~25 s, then declines within ~5 s to slightly below the pre-burst level, recovering within 100 s. 600 s later, another burst starts in the same way, but the observation cuts off <20 s after the burst begins. We tentatively identify these bursts as mode 0 (using the scheme of Bagnoli et al. 2015, MNRAS, 449, 268).

We thank the Swift team for approving and rapidly scheduling our observations.

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