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The transiently accreting millisecond X-ray pulsar Swift J0911.9-6452 returns to a high X-ray activity level

ATel #12846; *A. S. Parikh and R. Wijnands (UvA)*

on 6 Jun 2019; 21:56 UT

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Subjects: X-ray, Neutron Star, Transient, Pulsar

Referred to by ATel #: [12869](#)

The accreting millisecond X-ray pulsar Swift J0911.9-6452 was discovered in 2016 February (Serino et al. 2016). After its discovery, we initiated a long-term program to monitor the source using the X-ray Telescope (XRT) on board the Neil Gehrels Swift Observatory. The source exhibited a quasi-steady state for ~ 3.2 years (see Parikh & Wijnands, 2019) during which it maintained an average count rate of 4.4 c/s (in 0.5-10 keV energy range) only fluctuating by a factor of 0.7-1.5. However, on 2019 June 1, we reported a factor ~ 60 decay in X-ray luminosity, as observed over three different XRT observations carried out from 2019 May 14 to 2019 June 1.

We extracted the spectrum from our most recent observation. We fitted the spectrum (in the 0.5-10 keV range) with an absorbed power-law model and find a photon index of $\sim 1.9 \pm 0.2$ and the best fit equivalent hydrogen column density is $N_{\text{H}} \sim 0.5E22 \text{ cm}^{-2}$. The source luminosity during this observation was $\sim 1.5E36 \text{ erg/s}$ (0.5-10 keV, assuming a distance of 9.5 kpc; Watkins et al. 2015). This sudden increase in source brightness may be indicative of the source returning to outburst and that it will stay active again for a prolonged period, or it could be the start of an episode during which the source re-brightens and fades (perhaps several times, as has been observed for many systems now) before finally returning to quiescence. We have more approved XRT observations scheduled to further monitor the evolution of this source.

We thank the Swift team for scheduling and carrying out our requested observations.

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Parikh & Wijnands, 2019, ATel #12831

Serino et al. 2016, ATel #8872

Watkins et al. 2015, ApJ, 812, 149

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