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New Galactic transient IGR J17451-3022 still soft

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

Referred to by ATel #: [6533](#), [7028](#)

We report the analysis of new Swift/XRT observations of the transient IGR J17451-3022. This is a new transient discovered by INTEGRAL JEM-X (ATel #[6451](#)) which has been monitored by Swift/XRT multiple times per week (ATels #[6459](#), #[6469](#), #[6486](#)).

IGR J17451-3022 was observed by Swift/XRT in WT mode on September 25th. The source shows an absorbed flux (0.5-10 keV) of $1.1e-10$ erg/s/cm², similar to previous observations. We performed spectral analysis in the 0.8-10 keV band, comparing a blackbody, a disk blackbody and a power-law model. We found that a blackbody model with a temperature of 1.0 ± 0.1 keV, or a disk blackbody model with inner disk temperature of 1.4 ± 0.2 keV, better fit the spectrum (reduced chi-squared of 1.2 and 1.3 for blackbody and disk blackbody respectively), compared to a power-law with photon index 2.9 ± 0.5 (reduced chi-squared of 1.5 for 12 degrees of freedom). These temperatures are consistent with the previous observations reported in ATel #[6459](#).

In ATel #[6486](#), we reported an apparent spectral hardening in the Swift/XRT observation performed on Sep. 21st, where there was a 40 arcsec offset between the source and the active part of the detector. Performing a refined spectral analysis with a smaller extraction region (15 pixels radius) and careful extraction of the background from a same-size region, we find that the spectrum in the Sep. 21st observation is consistent with the previous observations, indicating that the observed hardening was spurious.

As our new analysis shows a consistent soft spectrum for this transient, its nature remains unclear; a low-mass X-ray binary or a magnetar remain viable possibilities.

We thank the Swift team for arranging our observations.

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