



UvA-DARE (Digital Academic Repository)

Detection of spectral hardening in IGR J17451-3022; evidence for a LMXB

Bahramian, A.; Heinke, C.O.; Wijnands, R.; Altamirano, D.

Publication date

2014

Document Version

Final published version

Published in

The astronomer's telegram

[Link to publication](#)

Citation for published version (APA):

Bahramian, A., Heinke, C. O., Wijnands, R., & Altamirano, D. (2014). Detection of spectral hardening in IGR J17451-3022; evidence for a LMXB. *The astronomer's telegram*, 6486. <http://www.astronomerstelegam.org/?read=6486>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Outside
 GCN
 IAUCs

Other
 ATel on [Twitter](#) and [Facebook](#)
 ATELstream
 ATel Community Site
 MacOS: [Dashboard Widget](#)

This space for free for your conference.



[[Previous](#) | [Next](#) | [ADS](#)]

Detection of spectral hardening in IGR J17451-3022; evidence for a LMXB

ATel #6486; *A. Bahramian, C. O. Heinke (Alberta), R. Wijnands (Amsterdam), D. Altamirano (Southampton)*
 on 22 Sep 2014; 19:56 UT
 Credential Certification: *Arash Bahramian (bahramia@ualberta.ca)*

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

Referred to by ATel #: [6501](#), [6533](#), [7028](#)



IGR J17451-3022 is a new transient discovered by INTEGRAL JEM-X (ATel #[6451](#)). Follow-up Swift/XRT observations found this transient to have a highly absorbed blackbody-like spectrum (ATel #[6459](#)). Searches for pulsations using XRT in WT mode found no pulsations in the the 0.01-280 Hz range, with upper limits on the pulsed fraction of roughly 10% (ATel #[6469](#)).

We are continuing to monitor this source using Swift/XRT. It has shown a soft thermal spectrum - consistent with ATel #[6459](#) - in observations performed on Sep. 15 and Sep. 19. However, the spectrum has become harder in the observation performed on Sep. 21.

The observation was done in WT mode and the source is clearly detected. We excluded photons with energies below 1.4 keV due to the expected low energy spectral residuals which appear in the windowed timing mode observations of heavily absorbed sources (see XRT Calibration Status at Leicester XRT digest). We performed spectral fitting and compared a blackbody, a disk blackbody and a power-law model. In contrast with previous observations, we found a power-law with a photon-index of 2.2 ± 0.5 gives a better fit in this observation (reduced chi-squared of 1.2 compared to 1.6 and 1.4 for blackbody and disk blackbody respectively, for 12 degrees of freedom).

There is a 40" offset between the known position of the source and the edge of the active part of the detector, therefore we only observe a portion of the point spread function of the source. This causes significant uncertainty in estimations of the flux, thus we can just infer a lower-limit of 1.1×10^{-10} erg/s/cm² (0.5-10 keV) on the unabsorbed flux.

The spectral hardening detected in this observation, along with the previous behaviour of this transient, is similar to outbursts of transient LMXBs, suggesting this source is a transient LMXB (with a distance $> \sim 8$ kpc) switching from a high-soft state to a low-hard state.

We thank the Swift team for quickly arranging our observations.

Related

- 7361 [Discovery of eclipses in the X-ray transient IGR J17451-3022](#)
- 7096 [INTEGRAL detection of the on-going outbursts from 1RXS J180408.9-342058 and GRO J1750-27](#)
- 7039 [Swift observations of 1RXS J180408.9-342058](#)
- 7028 [Continuing outburst of Galactic transient IGR J17451-3022](#)
- 7008 [MAXI/GSC observation of 1RXS J180408.9-342058 in outburst](#)
- 6997 [Swift/BAT detects an outburst from the neutron star binary 1RXS J180408.9-342058](#)
- 6839 [New Outburst of the Be/X-ray Transient GRO J1750-27 Detected with Fermi/GBM](#)
- 6602 [INTEGRAL/JEM-X sees enhanced activity in the Galactic center region: SAX J1747.0-2853 and IGR J17454-2919](#)
- 6574 [Hard X-ray spectral and timing properties of IGR J17454-2919 consistent with a black hole in the hard state](#)
- 6533 [Chandra Localization of IGR J17451-3022](#)
- 6530 [IGR J17454-2919: a new X-ray transient found by INTEGRAL/JEM-X close to the Galactic Center](#)
- 6501 [New Galactic transient IGR J17451-3022 still soft](#)
- 6486 [Detection of spectral hardening in IGR J17451-3022; evidence for a LMXB](#)
- 6469 [Swift observations of the ongoing outburst of IGR J17451-3022](#)
- 6459 [Soft, absorbed X-ray spectra of the new transient IGR J17451-3022](#)
- 6451 [A new X-ray transient, IGR J17451-3022, discovered by INTEGRAL/JEM-X near the Galactic Centre](#)
- 1400 [Further observations of GRO J1750-27 \(AX J1749.1-2639\) with INTEGRAL](#)
- 1385 [INTEGRAL Galactic bulge monitoring observations of GRO J1750-27 \(AX J1749.1-2639\), H1743-322 and SLX 1746-331](#)

R. E. Rutledge, Editor-in-Chief

Derek Fox, Editor

Mansi M. Kasliwal, Co-Editor

rrutledge@astronomerstelegam.org

dfox@astronomerstelegam.org

mansi@astronomerstelegam.org