



**UvA-DARE (Digital Academic Repository)**

**The neutron star LMXB 1RXS J180408.9-342058 transitioned to a soft X-ray state**

Degenaar, N.; Altamirano, D.; Deller, A.; Heinke, C.; Hessels, J.; Jaodand, A.; Miller-Jones, J.; Moldon, J.; Wijnands, R.

*Published in:*

The astronomer's telegram

[Link to publication](#)

*Citation for published version (APA):*

Degenaar, N., Altamirano, D., Deller, A., Heinke, C., Hessels, J., Jaodand, A., ... Wijnands, R. (2015). The neutron star LMXB 1RXS J180408.9-342058 transitioned to a soft X-ray state. *The astronomer's telegram*, 7352.

**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](#)

**Your Conference Here**

This space for free for conference advertising.

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

## The neutron star LMXB 1RXS J180408.9-342058 transitioned to a soft X-ray state

ATel #7352; *N. Degenaar (Cambridge), D. Altamirano (Southampton), A. Deller (ASTRON), C. Heinke (Alberta), J. Hessels (Amsterdam/ASTRON), A. Joadand (ASTRON), J. Miller-Jones (Curtin), J. Moldon (ASTRON), R. Wijnands (Amsterdam)*  
 on 7 Apr 2015; 14:53 UT

Credential Certification: *Nathalie Degenaar (degenaar@ast.cam.ac.uk)*

Subjects: X-ray, Neutron Star, Transient

[Tweet](#) [Recommend](#) 7

The neutron star low-mass X-ray binary 1RXS J180408.9-342058 started an accretion outburst in 2015 January (ATel #6997) and has remained active since. Around April 3, a significant drop in the hard (15-50 keV) X-rays is seen by [Swift/BAT](#), whereas an increase in the softer X-rays (2-10 keV) is seen by [MAXI](#). This suggests that the source has transitioned to a soft X-ray spectral state.

Pointed Swift/XRT observations show that in February-March the source was in a hard X-ray spectral state. Radio jets were detected and the 0.5-10 keV X-ray spectrum was adequately described by a simple absorbed power-law model with a hydrogen column density of  $N_H \sim 5E21$  cm<sup>-2</sup>, a photon index of  $\Gamma \sim 1.1$  and an unabsorbed flux of  $\sim (0.5-3)E-9$  erg cm<sup>-2</sup> s<sup>-1</sup> (ATels #7039, #7255). At the estimated distance of 5.8 kpc (ATel #4050), this translates into a 0.5-10 keV luminosity of  $\sim (0.2-1)E37$  erg s<sup>-1</sup>. However, Swift/XRT observations obtained on April 3 (1.1 ks) and April 6 (1.0 ks) show that the source brightened and that its X-ray spectrum softened. The 0.5-10 keV spectrum can now be described by a combination of a  $kT_{\text{disk}} = 0.09 \pm 0.02$  keV disk black body, a hotter  $kT_{\text{bb}} = 0.9 \pm 0.1$  keV black body, and a  $\Gamma = 1.75 \pm 0.15$  power law (with  $N_H = (0.8 \pm 0.2)E21$  cm<sup>-2</sup>). The inferred unabsorbed flux of  $\sim (1-1.5)E-8$  erg cm<sup>-2</sup> s<sup>-1</sup> translates into a luminosity of  $\sim (4-6)E37$  erg s<sup>-1</sup> at 5.8 kpc (0.5-10 keV). These two Swift/XRT observations show two absorption features around  $\sim 7$  and  $\sim 8$  keV that could possibly correspond to ionized iron and may indicate the presence of an accretion disk wind. These properties are indeed characteristic of a soft X-ray spectral state.

Swift/XRT monitoring of 1RXS J180408.9-342058 is ongoing. Multi-wavelength observations are encouraged.

### Related

- 7352** The neutron star LMXB 1RXS J180408.9-342058 transitioned to a soft X-ray state
- 7255** Radio detection of the transient neutron star LMXB 1RXS J180408.9-342058
- 7100** Optical observations of the transient 1RXS J180408.9-342058
- 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
- 6530** IGR J17454-2919: a new X-ray transient found by INTEGRAL/JEM-X close to the Galactic Center
- 6451** A new X-ray transient, IGR J17451-3022, discovered by INTEGRAL/JEM-X near the Galactic Centre
- 4085** Swift observations of 1RXS J180408.9-342058; return to quiescence
- 4050** INTEGRAL catches a type-I X-ray burst from the unclassified X-ray source 1RXS J180408.9-342058
- 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

[ **Telegram Index** ]

R. E. Rutledge, Editor-in-Chief

Derek Fox, Editor

Mansi M. Kasliwal, Co-Editor

rrutledge@astronomerstelegam.org

dfox@astronomerstelegam.org

mansi@astronomerstelegam.org