



## UvA-DARE (Digital Academic Repository)

### VLA detection of Aql X-1 during its new outburst

Russell, T.D.; Fijma, S.; Degenaar, N.; Kuulkers, E.; Sanchez-Fernandez, C.; Del Santo, M.; Tetarenko, A.; Diaz-Trigo, M.; Maccarone, T.; Miller-Jones, J.C.A.

**Publication date**

2024

**Document Version**

Final published version

**Published in**

The astronomer's telegram

**License**

Unspecified

[Link to publication](#)

**Citation for published version (APA):**

Russell, T. D., Fijma, S., Degenaar, N., Kuulkers, E., Sanchez-Fernandez, C., Del Santo, M., Tetarenko, A., Diaz-Trigo, M., Maccarone, T., & Miller-Jones, J. C. A. (2024). VLA detection of Aql X-1 during its new outburst. *The astronomer's telegram*, 16823. <https://www.astronomerstelegam.org/?read=16823>

**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.

ATel On

Patreon  
Mastodon  
X

# The Astronomer's Telegram

Post | Search | Policies  
Credential | Feeds | Email

13 Nov 2024; 15:48 UT

This space is free for your conference.

**Thanks to Patrons, The Astronomer's Telegram is free to read, free to publish and always will be. Thank you.**

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

## VLA detection of Aql X-1 during its new outburst

ATel #16823; *T. D. Russell (INAF-IASF Palermo), S. Fijma, N. Degenaar (UvA), E. Kuulkers, C. Sanchez-Fernandez (ESA), M. Del Santo (INAF-IASF Palermo), A. Tetarenko (U. Lethbridge), M. Diaz-Trigo (ESO), T. Maccarone (Texas Tech), J. C. A. Miller-Jones (Curtin)*

*on 20 Sep 2024; 22:22 UT*

*Credential Certification: Thomas Russell (thomas.russell@inaf.it)*

Subjects: Radio, Neutron Star, Transient

Referred to by ATel #: [16826](#), [16829](#), [16841](#), [16843](#), [16888](#)

### Tweet

Following the announcement of a new outburst from the neutron star X-ray binary Aql X-1 (Atels #[16821](#), #[16822](#)) we triggered radio observations with the Karl G. Jansky Very Large Array (VLA), project ID VLA/24A-127. The radio observations were carried out on 2024-09-20 with the telescope on source between 02:48 UT and 02:58 UT. The VLA was in an extended BnA configuration. Data were recorded at central frequencies of 5GHz and 7.5GHz, with 1GHz of bandwidth at each frequency. We used 3C 286 for bandpass and flux calibration, and J1856+0610 for phase calibration. Data were processed using the Common Astronomy Software Applications (CASA) pipeline (version 6.5.4.9; The CASA Team et al. 2022). Imaging was carried out at each frequency band using natural weighting, resulting in a beam size of 1.4"x1.1" at a position angle of 4.5 degrees east of north at 5GHz and 0.9"x0.7" with a position angle of 8 degrees at 7.5 GHz.

The CASA images show a point source at the Aql X-1 position. Fitting for a point source in the image plane, we measure flux densities of 52 +/- 13  $\mu$ Jy at 5GHz and 80 +/- 12  $\mu$ Jy at 7.5GHz. These flux densities suggest a flat-to-inverted radio spectrum, with a spectral index,  $\alpha$ , of 1.2 +/- 1.0, where  $S_\nu \propto \nu^\alpha$ . This is consistent with radio emission from a self-absorbed compact jet (Diaz-Trigo et al. 2018), typically associated with the

### Related

- [16888](#) MeerKAT detects radio emission from neutron star X-ray binary Aql X-1
- [16844](#) Erratum in ATel#16841: V- and R-band photometry
- [16843](#) Likely spectral transition of Aql X-1 seen by SVOM/ECLAIRS.
- [16841](#) OAN-SPM VR observations during the optical rise of Aql X-1
- [16840](#) Aql X-1: still at maximal levels
- [16829](#) Detection of thermonuclear bursts and X-ray reflection in Aql X-1 with the NuSTAR
- [16826](#) X-ray observation of Aql X-1 with the Neil Gehrels Swift Observatory
- [16823](#) VLA detection of Aql X-1 during its new outburst
- [16822](#) LCO detects new outburst from Aql X-1
- [16821](#) Einstein Probe detection of a new X-ray outburst from Aql X-1
- [16284](#) Optical and X-ray observations of Aql X-1 indicate its return to quiescence
- [16187](#) Aql X-1 reaches the peak of its 2023 outburst making it the brightest outburst since 2016
- [16174](#) Aql X-1: Neil Gehrels Swift Observatory XRT observations
- [16170](#) Aql X-1: the X-rays in recent outburst keep brightening indicated by LEIA observations
- [16169](#) Aql X-1 --- on the way to absolute record
- [16158](#) LEIA observations of the outburst from Aql X-1
- [16153](#) NICER observations of the new outburst from Aql X-1
- [16147](#) New outburst of Aql X-1 detected with XB-NEWS and MAXI
- [15403](#) X-ray Outburst of Aql X-1 indicated by the The Neil Gehrels Swift Observatory
- [15401](#) Aql X-1: indicators of optical outburst in 2022
- [15056](#) Optical outburst of Aql X-1 detected by Murikabushi

hard X-ray state of an X-ray binary.

Further radio observations are planned. Multiwavelength observations are strongly encouraged.

telescope

- 14563 Aquila X-1 returns to quiescence : optical monitoring of the 2021 outburst
- 14437 Optical brightening of Aql X-1 detected by ZTF
- 14079 MAXI/GSC detections of a new superburst from Aql X-1
- 13981 Aql X-1: new optical outburst
- 13961 Swift/XRT Detects Hard-State X-ray Emission from the 2020 Outburst of Aquila X-1
- 13953 XB-NEWS detects a new outburst from Aquila X-1
- 13020 Aql X-1: a new outburst is in progress
- 13016 Aquila X-1 in outburst: radio detection with AMI-LA
- 9306 Faulkes Telescope observations of the optical rise of a bright outburst of Aql X-1
- 3686 RXTE and Swift detect new activity from Aql X-1
- 2911 Radio non-detection of Aql X-1
- 2902 RXTE/PCA detection of QPO near 0.22 Hz in Aql X-1 during ongoing outburst
- 2891 Optical Monitoring Observations of AQL X-1
- 2871 Aql X-1 in brightest outburst since 2003
- 2850 Outburst of Aql X-1 as observed by RXTE and Swift
- 2748 Further Optical Observations of Aql X-1
- 2744 X-ray, UV, Optical and NIR Observations of Aql X-1
- 2742 New X-ray Activity from Aql X-1
- 2547 Optical/IR flux fading rapidly in GX 339-4: OIR jet quenching
- 2288 Aql X-1 back in outburst: multi-wavelength observations
- 1970 Optical and hard X-ray detections of an outburst from Aquila X-1
- 1218 Optical and Near-IR Observations of the Current Outburst of Aql X-1

[ [Telegram Index](#) ]

R. E. Rutledge, Editor-in-Chief

[rrutledge@astronomerstelegam.org](mailto:rrutledge@astronomerstelegam.org)

Derek Fox, Editor

[dfox@astronomerstelegam.org](mailto:dfox@astronomerstelegam.org)