James Freeburn

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Research Employment History

May 2026 – Present	**Postdoctoral Researcher,** University of North Carolina at Chapel Hill.
November 2025 – April 2025	**–,** University of Sydney and ARC OzGrav
July 2025 – October 2025	**–,** University of North Carolina at Chapel Hill.

Education

Nov 2021 – July 2025 — **Ph.D., Swinburne University,** Centre for Astrophysics and Supercomputing.
Thesis title: *Unraveling the Mysteries of Gamma-ray Bursts with Fast-cadenced Optical Imaging*
Principal Supervisor: Prof. Jeffrey Cooke

Feb 2017 – Oct 2020 — **BAdvSc (Hons), University of Queensland,** School of Mathematics and Physics.
Thesis title: *Calibrating Galaxy Metallicity Tracers*
Principal Supervisor: Dr. Sarah Sweet

Research Interests

- Fast optical transients.
- Gravitational waves and multi-messenger astronomy.
- Gamma-ray bursts and their afterglows.
- Radio transients and variables.

Publications

I am first author on five papers and a co-author on a further 23. Less than a year after submitting my PhD, my work has accrued over three hundred citations, with an h-index of 11. I am a co-author of two papers published in Nature and have also published as first author in The Astrophysical Journal Letters.

Awarded Telescope Time as Principal Investigator

2025A — **12 hours,** Australian National University 2.3m WiFeS
Spectroscopic Follow-up of Fast Transients from ZTF

2024B — **5 hours,** Australian National University 2.3m WiFeS
Spectroscopic Follow-up of Fast Transients from ZTF

6 hours, Los Cumbres Observatory 2m MuSCAT3
Unveiling the Optical Nature of an Unusual Radio Binary

Invited Talks

20 March 2024	**Colloquium,** OzGrav telecon, Australia.
28 July 2025	**Workshop talk,** Rubin Community Workshop, USA.
27 Aug 2024	**Colloquium,** LSST Transients and Variable Stars collaboration telecon, international.
9 Aug 2024	**Colloquium,** OzGrav telecon, Australia.
24 Jan 2024	**Colloquium,** Pontificia Universidad Católica de Valparaíso, Chile.

Invited Talks (continued)

23 Jan 2024 — **Colloquium,** European Southern Observatory, Santiago, Chile.

Professional Memberships

Jan 2022 – Present — ARC Centre for Excellence for Gravitational Wave Discovery (OzGrav).

July 2024 – Present — ASKAP Variables and Slow Transients (VAST) Collaboration.

July 2025 – Present — Global Relay of Observatories Watching Transients Happen (GROWTH) Collaboration.

Rubin Transients and Variable Stars Science Collaboration

September 2025 – Present — The Public AEON Spectroscopic Survey for Transient Astronomy

Miscellaneous Experience

August 2025 – Present — **Student Mentor**, University of North Carolina.

Aug 2023 – Aug 2024 — **Colloquium Organiser**, Swinburne University.

Aug 2022 – Aug 2023 — **Code of Conduct Committee**, Swinburne University.

Jun 2022 – Jun 2023 — **Work Experience Supervisor**, Swinburne University.

May 2022 – May 2023 — **Social Coordinator**, Swinburne University.

Skills

Coding — C, C++, IDL, LaTeX, Python, R, Rust, SQL.

Data Analysis Techniques — Integral field spectroscopy, machine learning, Markov-Chain Monte-Carlo methods, photometry, supercomputing.

Observing Experience — Southern Astrophysical Research (SOAR) Telescope GHTS, Victor M. Blanco Telescope DECam, Keck Telescope LRIS, Anglo-Australian Telescope 2dF/AAOmega, Australia Telescope Compact Array, Murriyang Parkes Radio Telescope.

Other Employment History

Aug 2018 – May 2025 — **Infantry Soldier,** Australian Army Reserve.

Jan 2021 – Oct 2021 — **Data Analyst,** Queensland Curriculum and Assessment Authority.

Publication List

First author

1. **Freeburn, James** et al. **Apr. 2026**. "Prospects for GRB Afterglow Discovery with the Eric and Wendy Schmidt Observatory System". In: *arXiv e-prints*, arXiv:2604.13650, arXiv:2604.13650. DOI: 10.48550/arXiv.2604.13650. arXiv: 2604.13650 [astro-ph.HE].

2. **Freeburn, James** et al. **Jan. 2026**. "The Deeper, Wider, Faster programme's first DECam optical data release". In: *PASA* 43, e009, e009. DOI: 10.1017/pasa.2025.10140. arXiv: 2601.10902 [astro-ph.HE].

3. **Freeburn, James** et al. **Feb. 2025**. "GRB 220831A: a hostless, intermediate gamma-ray burst with an unusual optical afterglow". In: *MNRAS* 537.2, pp. 2061–2078. DOI: 10.1093/mnras/staf147. arXiv: 2411.14749 [astro-ph.HE].

4. **Freeburn, James** et al. **Nov. 2025**. "Identification and Photometric Classification of Extragalactic Transients in the Vera C. Rubin Observatory's Data Preview 1". In: *ApJL* 994.1, L24, p. L24. DOI: 10.3847/2041-8213/ae1cba. arXiv: 2507.22864 [astro-ph.HE].

5. **Freeburn, James** et al. **July 2024**. "A fast-cadenced search for gamma-ray burst orphan afterglows with the Deeper, Wider, Faster programme". In: *MNRAS* 531.4, pp. 4836–4851. DOI: 10.1093/mnras/stae1489. arXiv: 2405.11949 [astro-ph.HE].

Co-author

1. Eappachen, D., […], **Freeburn, J.**, et al. **Jan. 2026**. "Characterizing EP241107a: multiwavelength observations of an Einstein Probe-detected fast X-ray transient". In: *MNRAS* 545.1, staf2062, staf2062. DOI: 10.1093/mnras/staf2062. arXiv: 2511.02562 [astro-ph.HE].

2. O'Connor, Brendan, […], **Freeburn, James**, et al. **Mar. 2026**. "SN 2025adpq: A Type Ia supernova in a collisional ring formed during a major galaxy merger". In: *arXiv e-prints*, arXiv:2603.15899, arXiv:2603.15899. DOI: 10.48550/arXiv.2603.15899. arXiv: 2603.15899 [astro-ph.GA].

3. Petrou, Flora, […], **Freeburn, James**, et al. **Jan. 2026**. "Discovery of the redback millisecond pulsar PSR J17284608 with ASKAP". In: *PASA* 43, e007, e007. DOI: 10.1017/pasa.2025.10136. arXiv: 2512.09339 [astro-ph.HE].

4. Sevilla, Cassie, […], **Freeburn, James**, et al. **Jan. 2026**. "Multiwavelength Analysis of Six Luminous, Fast Blue Optical Transients". In: *arXiv e-prints*, arXiv:2601.18926, arXiv:2601.18926. DOI: 10.48550/arXiv.2601.18926. arXiv: 2601.18926 [astro-ph.HE].

5. Swain, Vishwajeet, […], **Freeburn, James**, et al. **Jan. 2026**. "GRB 250704B: An Off-axis Short GRB with a Long-lived Afterglow Plateau". In: *ApJL* 996.2, L38, p. L38. DOI: 10.3847/2041-8213/ae2a20. arXiv: 2509.02769 [astro-ph.HE].

6. Van Bemmel, Natasha, […], **Freeburn, James**, et al. **Mar. 2026**. "An extremely fast fading population II dwarf nova candidate: caught spectroscopically on the rise". In: *MNRAS* 547.1, stag309, stag309. DOI: 10.1093/mnras/stag309. arXiv: 2510.26682 [astro-ph.SR].

7. Carney, Jonathan, […], **Freeburn, James**, et al. **Dec. 2025**. "Optical/Infrared Observations of the Extraordinary GRB 250702B: A Highly Obscured Afterglow in a Massive Galaxy Consistent with Multiple Possible Progenitors". In: *ApJL* 994.2, L46, p. L46. DOI: 10.3847/2041-8213/ae1d67. arXiv: 2509.22784 [astro-ph.HE].

8. Goode, Simon R., […], **Freeburn, James**, et al. **Nov. 2025**. "A machine-learning empowered search for sub-minute optical transient events with the Deeper, Wider, Faster programme". In: *MNRAS* 543.4, pp. 3915–3928. DOI: 10.1093/mnras/staf1561. arXiv: 2509.07592 [astro-ph.IM].

9. Hall, Xander J., […], **Freeburn, James**, et al. **Oct. 2025**. "AT2025ulz and S250818k: Investigating early time observations of a subsolar mass gravitational-wave binary neutron star merger candidate". In: *arXiv e-prints*, arXiv:2510.24620, arXiv:2510.24620. DOI: 10.48550/arXiv.2510.24620. arXiv: 2510.24620 [astro-ph.HE].

10 Hu, Lei, […], **Freeburn, James**, et al. **Sept. 2025**. "Kilonova Constraints for the LIGO/Virgo/KAGRA Neutron Star Merger Candidate S250206dm: GW-MMADS Observations". In: *ApJL* 990.2, L46, p. L46. DOI: 10.3847/2041-8213/adfd49. arXiv: 2506.22626 [astro-ph.HE].

11 Kasliwal, Mansi M., […], **Freeburn, James**, et al. **Dec. 2025**. "ZTF25abjmnps (AT2025ulz) and S250818k: A Candidate Superkilonova from a Subthreshold Subsolar Gravitational-wave Trigger". In: *ApJL* 995.2, L59, p. L59. DOI: 10.3847/2041-8213/ae2000. arXiv: 2510.23732 [astro-ph.HE].

12 Lane, Zachary G., […], **Freeburn, James**, et al. **Nov. 2025**. "SN 2019vxm: A Shocking Coincidence between Fermi and TESS". In: *arXiv e-prints*, arXiv:2511.15975, arXiv:2511.15975. DOI: 10.48550/arXiv.2511.15975. arXiv: 2511.15975 [astro-ph.HE].

13 O'Connor, Brendan, […], **Freeburn, James**, et al. **Feb. 2025**. "Characterization of a Peculiar Einstein Probe Transient EP240408a: An Exotic Gamma-Ray Burst or an Abnormal Jetted Tidal Disruption Event?" In: *ApJL* 979.2, L30, p. L30. DOI: 10.3847/2041-8213/ada7f5. arXiv: 2410.21622 [astro-ph.HE].

14 O'Connor, Brendan, […], **Freeburn, James**, et al. **Nov. 2025**. "Comprehensive X-Ray Observations of the Exceptional Ultralong X-Ray and Gamma-Ray Transient GRB 250702B with Swift, NuSTAR, and Chandra: Insights from the X-Ray Afterglow Properties". In: *ApJL* 994.1, L17, p. L17. DOI: 10.3847/2041-8213/ae1741. arXiv: 2509.22787 [astro-ph.HE].

15 Roxburgh, Hugh, […], **Freeburn, James**, et al. **Sept. 2025**. "TESSELLATE: Piecing Together the Variable Sky with TESS". In: *AJ* 170.3, 186, p. 186. DOI: 10.3847/1538-3881/adf21b. arXiv: 2502.16905 [astro-ph.IM].

16 Ryczanowski, Dan, […], **Freeburn, James**, et al. **May 2025**. "A follow-up strategy enabling discovery of electromagnetic counterparts to highly magnified gravitationally lensed gravitational waves". In: *Philosophical Transactions of the Royal Society of London Series A* 383.2295, 20240118, p. 20240118. DOI: 10.1098/rsta.2024.0118. arXiv: 2503.21811 [astro-ph.HE].

17 Srinivasaragavan, Gokul P., […], **Freeburn, James**, et al. **Aug. 2025**. "EP250108a/SN 2025kg: A Jet-driven Stellar Explosion Interacting with Circumstellar Material". In: *ApJL* 988.2, L60, p. L60. DOI: 10.3847/2041-8213/ade870. arXiv: 2504.17516 [astro-ph.HE].

18 Van Bemmel, Natasha, […], **Freeburn, James**, et al. **Mar. 2025**. "An optically led search for kilonovae to z∼0.3 with the Kilonova and Transients Programme (KNTraP)". In: *MNRAS* 537.4, pp. 3332–3348. DOI: 10.1093/mnras/staf332. arXiv: 2411.16136 [astro-ph.HE].

19 Dobie, Dougal, […], **Freeburn, James**, et al. **Nov. 2024**. "A two-minute burst of highly polarized radio emission originating from low Galactic latitude". In: *MNRAS* 535.1, pp. 909–923. DOI: 10.1093/mnras/stae2376. arXiv: 2406.12352 [astro-ph.SR].

20 Andreoni, Igor, […], **Freeburn, James**, et al. **Jan. 2023**. "Publisher Correction: A very luminous jet from the disruption of a star by a massive black hole". In: *Nature* 613.7945, E6–E6. DOI: 10.1038/s41586-023-05699-0.

21 Dobie, D., […], **Freeburn, J.**, et al. **Mar. 2023**. "Radio transients and variables in the tenth Deeper, Wider, Faster observing run". In: *MNRAS* 519.3, pp. 4684–4698. DOI: 10.1093/mnras/stac3731. arXiv: 2211.07049 [astro-ph.HE].

22 Ho, Anna Y. Q., […], **Freeburn, James**, et al. **Nov. 2023**. "Minutes-duration optical flares with supernova luminosities". In: *Nature* 623.7989, pp. 927–931. DOI: 10.1038/s41586-023-06673-6. arXiv: 2311.10195 [astro-ph.HE].

23 Andreoni, Igor, […], **Freeburn, James**, et al. **Dec. 2022**. "A very luminous jet from the disruption of a star by a massive black hole". In: *Nature* 612.7940, pp. 430–434. DOI: 10.1038/s41586-022-05465-8. arXiv: 2211.16530 [astro-ph.HE].