James Freeburn

jim@freeburn.net.au 0009-0006-7990-0547 james-freeburn

Education

Nov 2021 – May 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

Publications

1. Dobie, Dougal, […], **Freeburn, James**, et al. **June 2024**. "A two-minute burst of highly polarised radio emission originating from low Galactic latitude". In: *arXiv e-prints*, arXiv:2406.12352, arXiv:2406.12352. DOI: 10.48550/arXiv.2406.12352. arXiv: 2406.12352 [astro-ph.SR].
2. **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].
3. Dobie, Dougal, […], **Freeburn, James**, 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].
4. 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].
5. 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].

Research Interests

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

Awarded Telescope Time as Principal Investigator

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

27 Aug 2024 — **Colloquium,** LSST Transients and Variable Stars collaboration telecon, international.
9 Aug 2024 — **Colloquium,** OzGrav telecon, Australia.
2 Feb 2024 — **Conference Talk,** Transients Down Under, Australia.
24 Jan 2024 — **Colloquium,** Pontificia Universidad Católica de Valparaíso, Chile.
23 Jan 2024 — **Colloquium,** European Southern Observatory, Santiago, Chile.
5 July 2023 — **Conference Talk,** Astronomical Society of Australia Annual Science Meeting 2023, Australia.
3 May 2023 — **Workshop Talk,** OzFink Workshop, Australia.

Professional Memberships

Jan 2022 – Present — ARC Centre for Excellence for Gravitational Wave Discovery (OzGrav).
July 2024 – Present — ASKAP Variables and Slow Transients (VAST) Collaboration.

Miscellaneous Experience

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, SQL.
Data Analysis Techniques — Integral field spectroscopy, machine learning, Markov-Chain Monte-Carlo methods, photometry, supercomputing.
Observing Experience — Victor M. Blanco Telescope DECam, Keck Telescope LRIS, Anglo-Australian Telescope 2dF/AAOmega, Australia Telescope Compact Array, Murriyang Parkes Radio Telescope.

Employment History

Aug 2018 – Present — **Infantry Soldier,** Australian Army Reserve.
Jan 2021 – Oct 2021 — **Data Analyst,** Queensland Curriculum and Assessment Authority.