

# Natasha Van Bemmell

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Melbourne, Victoria, Australia

## RESEARCH INTERESTS

Time-Domain Astronomy · Multi-Wavelength/Multi-Messenger Observations · Kilonovae · Fast Transient Events

## EDUCATION

- **Swinburne University of Technology - Centre for Astrophysics & Supercomputing (CAS)** 2022 - 2025  
*Doctor of Philosophy (Ph.D.) in Astrophysics, expected August 2025* Melbourne, Australia
  - Thesis: Exploring the Optical Universe for Kilonovae and Fast Transients
  - Supervisors: Prof. Jeff Cooke, Dr. Anais Möller & Dr. Jielai Zhang
- **Swinburne University of Technology** 2018 - 2021  
*Bachelor of Science (Hons) Major: Physics* Melbourne, Australia
  - Honors Thesis: Dust in the Interstellar Medium: What is it Like Really?
  - Supervisor: Dr. Jielai Zhang

## TEACHING AND RESEARCH EXPERIENCE

- **Swinburne University of Technology** February 2024 - June 2024  
*Tutor* Melbourne, Australia
  - Maths and Statistics Help centre (MASH) on campus, with focus on physics
- **Swinburne University of Technology** March 2023 - June 2023  
*Lab Demonstrator* Melbourne, Australia
  - Energy and Motion, first year physics course (PHY10001)
- **Swinburne University of Technology** March 2020 - June 2020  
*Study Group Leader* Melbourne, Australia
  - Organised and led weekly study groups for a first year physics course (PHY10001)

## LEADERSHIP, PROFESSIONAL ACTIVITIES, AND MEMBERSHIPS

- **Organiser, Rubin First Look Watch Party** June 2025
- **Member, Fink** (transient broker for Rubin LSST and ZTF) December 2024 – Present
- **Harley Wood School of Astronomy (HOC)** February 2024 – June 2024
- **Transients Down Under (LOC)** January 2024 – February 2024
- **AstroTour Guide**, Swinburne University of Technology (CAS) January 2024 – Present
- **Journal Club Leader & Organiser**, Swinburne University of Technology (CAS) April 2023 – April 2024
- **Member, the Astronomical Society of Australia** May 2022 – Present
- **Member, SUPER-IRNET** March 2022 – Present
- **Member, ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav)** March 2022 – Present

## HONOURS AND AWARDS

- **MNRAS Student Prize** July 2025  
*Monthly Notices of the Royal Astronomical Society*
- **Rising Star Award (2nd)** November 2023  
*OzGrav, ARC Centre of Excellence for Gravitational Wave Discovery*
- **Best Student Poster (3rd & People's Choice)** July 2023  
*Astronomical Society of Australia (ASA)*
- **Best Student Sparkler (2nd)** July 2023  
*Astronomical Society of Australia (ASA)*

## SKILLS

- **Soft skills:** Public Speaking, Written & Oral communication, Teamwork, Problem Solving Skills
- **Programming Languages:** Python (proficient), Bash (experience), LaTeX, HTML (experience)
- **Software and Tools:** Source Extractor, PSFEx, SWarp, ds9, IRAF (experience), VS Code, Jupyter Notebooks
- **Computing:** Supercomputing/SLURM, Git/Github

## INVITED TALKS

- **UniMelb Astro Colloquium** September 2023  
*University of Melbourne, Melbourne, Australia*
- **OzGrav O4 Workshop** June 2023  
*Swinburne University of Technology, Melbourne, Australia*

## COLLOQUIA, ACADEMIC PRESENTATIONS, AND SEMINARS

- **Strongly Lensed Transients from the Vera C. Rubin Observatory: Readiness Workshop** September 2025  
*University of Birmingham, England*
- **Astrophysics Research Centre Seminar** September 2025  
*Queen's University Belfast, Northern Ireland*
- **OzGrav Videocon** July 2025  
*Swinburne University of Technology, Melbourne, Australia*
- **Transients Down Under (Contributed Talk)** January 2024  
*Swinburne University of Technology, Melbourne, Australia*
- **CASFest** December 2023  
*Swinburne University of Technology, Melbourne, Australia*
- **DPA Seminar Series** August 2023  
*Swinburne University of Technology, Melbourne, Australia*
- **ASA Annual Scientific Meeting (Poster & Sparkler)** June 2023  
*Macquarie University, New South Wales, Australia*
- **Swinburne Physics & Outer-space Club (SPOC) Researchers Review** April 2023  
*Swinburne University of Technology, Melbourne, Australia*

## TELESCOPE OBSERVING PROPOSALS AND EXPERIENCE

| Cycle        | Instrument      | Time Awarded |
|--------------|-----------------|--------------|
| 2025A (Co-I) | KOALA + AAOmega | 2 nights     |
| 2024A (PI)   | 2dF + AAOmega   | 2 nights     |
| 2023B (PI)   | 2dF + AAOmega   | 2 nights     |
| 2023A (PI)   | 2dF + AAOmega   | 2 nights     |

- **Observation Experience:** W. M. Keck Observatory (LRIS, OSIRIS), Victor M. Blanco 4-meter Telescope (DECam), Anglo-Australian Telescope (2dF + AAOmega, KOALA)

## PHYSICS & ASTRONOMY OUTREACH

- **Rubin First Look Watch Party** June 2025  
*Swinburne University of Technology*
  - Organised the hosting of a Rubin First Look Watch Party to unveil the first images from the Vera C. Rubin Observatory (1 of 350 watch parties worldwide)
  - MC of the event, set up 8-inch telescopes and supervised stargazing activities
- **AstroTour Guide** January 2024 - Present  
*Swinburne University of Technology (CAS)*
  - I have run several [AstroTours](#), presenting 3D movies, and a solar system model to various audiences
  - Ran public AstroTours during Swinburne's Open Day
- **STEM Futures: Celebrating Women and Diversity in STEM** March 2025  
*Casey Tech School*
  - Participated in a networking lunch with Year 9 and 10 girls interested in science
  - Helped run a workshop focused on black holes, dark matter, and gravitational waves
- **Spooktacular Space Halloween Event** October 2023  
*Swinburne University of Technology (CAS)*
  - Run astronomy VR demonstrations to the public attendees
- **Mission Gravity School Visits** October 2023  
*OzGrav*
  - In school visits to Year 10 students, assisted running the [Mission Gravity](#) program
  - Supervised students through a VR program about stellar evolution
- **National Science Week Event: SciVR at Burnley Brewing** August 2023  
*Burnley Brewing*
- **Work Experience Leader** June 2023  
*Swinburne University of Technology (CAS)*

- Supervised 11 Year 10 students for one week of work experience at CAS
- I planned a week of activities for these students, developing basic research and Python skills

## • PHYSCON 2023

February 2023

*Swinburne University of Technology*

- Student ambassador for the Victorian Physics Teachers Conference

## PUBLICATIONS

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- **Van Bemmell, N.** (2025 in prep.), *An extremely fast fading population II dwarf nova candidate: caught spectroscopically on the rise*
- **Van Bemmell, N. & Zhang, J.** (2025), *An Optically Led Search for Kilonovae to  $z \sim 0.3$  with the Kilonova and Transients Program (KNTrAP)*, MNRAS, 537, 4, <https://doi.org/10.1093/mnras/staf332>
- Freeburn, J., Cooke, J., ..., **Van Bemmell, N.** (2025), *The Deeper, Wider, Faster programme's first DECam optical data release: probing the minute-timescale sky*, submitted to PASA
- Goode, S., Webb, S., ..., **Van Bemmell, N.** (2025), *A Machine Learning empowered search for Sub-Minute Optical Transient Events with the Deeper, Wider, Faster programme*, submitted to MNRAS, <https://arxiv.org/abs/2509.07592>
- Ryczanowski, D., Cooke, J., ..., **Van Bemmell, N.** (2025), *A follow-up strategy enabling discovery of electromagnetic counterparts to highly magnified gravitationally lensed gravitational waves*, Phil. Trans. R. Soc. A, 383: 20240118, <https://doi.org/10.1098/rsta.2024.0118>
- Freeburn, J., O'Connor, B., ..., **Van Bemmell, N.** (2024), *GRB 220831A: a hostless, intermediate Gamma-ray burst with an unusual optical afterglow*, MNRAS, 537, 2, <https://doi.org/10.1093/mnras/staf147>
- Freeburn, J., Cooke, J., ..., **Van Bemmell, N.** (2024), *A Fast-cadenced Search for Gamma-Ray Burst Orphan Afterglows with the Deeper, Wider, Faster Programme*, MNRAS, 531, 4, <https://doi.org/10.1093/mnras/stae1489>
- Freeburn, J., **Van Bemmell, N.**, Dobie, D., Möller, M., Cooke, J., Suhr, M., Webb, S. (2022), *GRB 220831A: DECam optical counterpart follow-up*, GCN Circular, 32548, <https://gcn.nasa.gov/circulars/32548> (initial IR excess was thought to be a KN signature)