Natasha Van Bemmel

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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 Philisophy (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)
- **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

- **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

- **Van Bemmel, N.** (2025 in prep.), *AT2022kak: Discovery of an Extremely Fast Fading Dwarf Nova*
- **Van Bemmel, N. & Zhang, J.** (2025), *An Optically Led Search for Kilonovae to z∼0.3 with the Kilonova and Transients Program (KNTraP)*, MNRAS, 537, 4, https://doi.org/10.1093/mnras/staf332
- Freeburn, J., Cooke, J., ..., **Van Bemmel, N.**, *The Deeper, Wider, Faster programme's first DECam optical data release: probing the minute-timescale sky*, submitted to PASA
- Goode, S., Webb, S., ..., **Van Bemmel, N.** (2025), *A Machine Learning empowered search for Sub-Minute Optical Transient Events with the Deeper, Wider, Faster programme*, submitted to MNRAS
- Ryczanowski, D., Cooke, J.,..., **Van Bemmel, 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 Bemmel, 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 Bemmel, 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 Bemmel, 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)*