Curriculum Vitae of Ryan White

Correct as of December 18, 2024

Personal & Contact Information

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Education

Master of Research — Jan 2025 – Nov 2025 (expected)
Macquarie University
Topic: Radiative and Hydrodynamical Modelling of Colliding Wind Binaries
Supervisors: A/Prof Benjamin Pope and Prof Orsola De Marco

Bachelor of Science (Hons) — Jan 2024 – Nov 2024
The University of Queensland
Graduated with Class I Honours in Physics
Thesis Title: *Geometric Modelling of Wolf-Rayet Binary Colliding Wind Nebulae*
Supervisors: Dr Benjamin Pope (UQ) and Prof Peter Tuthill (USyd)

Bachelor of Science — Jul 2017 – Dec 2023
The University of Queensland
Extended Major in Physics

Bachelor of Mathematics — Jul 2017 – Dec 2023
The University of Queensland
Major in Applied Mathematics

Teaching Experience

Casual Academic / Teaching Assistant — 2023–Present
PHYS3080 – Extragalactic Astrophysics & Cosmology
School of Mathematics and Physics, The University of Queensland

- Developed material for and tutored the course of ~ 50 students. Responsibilities included liaising with course staff to develop a simulation (using Python) that adhered to course aims/goals. I was also responsible for teaching students how to work with data in the context of astrophysics through the use of my program. Additional duties included monitoring and responding on the course discussion board, as well as marking assignments and giving feedback on research paper style reports.

Teaching Assistant — 2022–Present
PHYS2082 – Space Science & Stellar Astrophysics
School of Mathematics and Physics, The University of Queensland

- Responsibilities included assisting classes of ~ 60 students with the course content, and providing guidance and feedback on assessment. I also graded undergraduate reports and exams, and performed moderation/support duties for the other course tutors to ensure consistent feedback to students.

"Super Tutor" / Teaching Assistant — 2021–Present
SCIE1000 – Theory & Practice in Science
School of Mathematics and Physics, The University of Queensland

- Routinely conveyed course material to multiple classes of 50+ students, including (but not limited to) curve fitting data, data science in Python, and assessing the validity of numerical models to explain observed phenomena. Responsibilities also included marking assignments and final exams.
- Super tutor duties included interfacing with course coordinators and lecturers as to ensure students progressed through the course to their highest potential, providing support to other tutors, and moderating and distributing marking material for the course among other administrative duties.

Casual Academic / Teaching Assistant — 2024
PHYS3071 – Computational Physics
School of Mathematics and Physics, The University of Queensland

- Developed course material for student self-study in the form of an automated Python script unit tester. I also tutored the course, teaching students about common mathematical/computer science topics such as root finding, ODE/PDEs, numerical integration, etc.

Research Experience

CSIRO Undergraduate Vacation Scholarship Nov 2024 – Feb 2025
Supervisor: Dr Andrew Zic

- We researched the mysterious long period radio transients. The project included analysing and cleaning ATCA and ASKAP radio data and developing new techniques to discover hidden periodic signals within interferometric visibilities.

Swinburne CAS Vacation Scholarship Nov 2023 – Feb 2024
Supervisor: Dr Simon Stevenson

- We developed N-body simulations in Python/C to model binary black hole formation within active galactic nuclei accretion disks. The simulations were compared to the rate of binary black hole inspiral measured with LIGO/VIRGO.

University of Queensland Winter Research Scholarship Jun 2023
Supervisor: Prof Tamara Davis

- We investigated how the expanding universe induces time dilation in the photometry of Type Ia supernovae. Using data from the Dark Energy Survey (DES), we measured the effective time dilation stretching in light curves as a function of redshift using our own Python algorithms.

Undergraduate Research Jun – Nov 2022
Supervisor: Dr Benjamin Pope

- We analysed binary star light curves utilising data from the TESS Space Telescope within Python. We inferred analytic surface maps to each component of the binary stellar system DI Herculis and found that the primary star is likely a SPB star, and the project yielded a high distinction (7/7) grade.

Publications

Ryan White, Tamara Davis, Geraint Lewis et al., *"The Dark Energy Survey Supernova Program: Slow supernovae show cosmological time dilation out to $z \sim 1$."* arXiv:2406.05050 (2024)

Book Chapters

Ryan White & Peter Tuthill, *"Wolf-Rayet Colliding Wind Binaries"* arXiv:2412.12534 (2024), for publication in Elsevier's *Encyclopedia of Astrophysics*

Awards and Scholarships

The Andy Thomas Space Foundation Uranus Scholarship 2024
Best Science Talk, Mount Stromlo Student Seminars 2024
Student Publication Award Honourable Mention, University of Queensland, for White et al (2024) arXiv:2406.05050 2024
Honours Research Project Runner-Up, UQ Science Undergraduate Research Conference 2024
Dean's Commendation for Academic Excellence 2023, 2024
Outstanding Contribution Award, UQ School of Mathematics and Physics 2022

Observing and Proposals

Primary Investigator:

- VLTI observing of the colliding wind binary *Apep*, ESO Period 114 2024/5

Talks

Stars in Brisbane Conference, University of Southern Queensland November 2024
Physics Club Honours Talks, University of Queensland October 2024
Mount Stromlo Student Seminars, Australian National University September 2024
UQ Science Undergraduate Research Conference, University of Queensland September 2024
Weekly Astronomy Seminar, University of Tasmania July 2024

Outreach and Communication

Scientific American – Interviewed for an article covering White et al (2024).
Cosmology Talks – Accompanying video for White et al (2024) on Cosmological Time Dilation
UQ Work Experience Program 2024 – Helped introduce high school students to astrophysics at UQ, involving programming projects, telescope demonstrations, and a "Meet the Researcher" talk
Laura Street Festival 2024 – Ran a stall focusing on solar telescope viewing aimed at the public, fielding any questions

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Technical Skills

- *Programming Languages*: Python/Jax, C/C++, Git, R, Windows Subsystem for Linux and Bash scripting, Matlab
- *Misc. Skills*: Proficient in LaTeX, capable '*Google-r*', confident with the Microsoft/Google Suite, VSCode/Spyder, Jupyter Notebooks, among other applications/environments. I am also a professional (but retired) traditional landscape artist.

References

Please email me to request reference contact information.