



RYAN JAMES TURNER

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Centre for Astrophysics & Supercomputing (CAS)
Swinburne University of Technology, 3122, VIC, Australia

Professional Experience

Postdoctoral Research Associate

Swinburne University of Technology

Melbourne, Australia

36 months funding (Feb. 2023 – Feb. 2026)

Education

PhD in Astrophysics

Swinburne University of Technology

Melbourne, Australia

Apr. 2019 – Nov. 2022

- Thesis: *Probing cosmological growth and expansion with the peculiar velocity field*
- Supervisors: Prof Chris Blake, Dr Rossana Ruggeri

MSc in Physics (Astronomy & Astrophysics) with Distinction

University of Western Australia (UWA)

Perth, Australia

Feb. 2017 – Jul. 2018

- Thesis: *Detecting Low Surface Brightness Galaxies in Deep Data and Calculating Their Contribution to the Stellar Mass Density of the Universe*
- Supervisors: Prof Simon Driver, A/Prof Aaron Robotham, Dr Luke Davies

Bachelor of Science in Physics

University of Western Australia

Perth, Australia

Feb. 2013 – Dec. 2016

Publications

1. **Turner, R. J.**, *Cosmology with Peculiar Velocity Surveys*, arXiv pre-print (2024), <https://arxiv.org/abs/2411.19484>
2. Blake, C., **Turner, R. J.**, *Forecasting the accuracy of velocity-field reconstruction*, OJA 7, 87 (2024), <https://arxiv.org/abs/2408.05660>
3. Lyall, S., Blake, C., **Turner, R. J.**, *Constraining modified gravity scenarios with the 6dFGS and SDSS peculiar velocity data sets*, MNRAS 532, 3972 (2024), <https://arxiv.org/abs/2407.18684>
4. Blake, C., **Turner, R. J.**, *On the correlations of galaxy peculiar velocities and their covariance*, MNRAS 527, 501 (2024), <https://arxiv.org/abs/2308.15735>
5. **Turner, R. J.**, Blake, C., *Biases in velocity reconstruction: investigating the effects on growth rate and expansion measurements in the local universe*, MNRAS 526, 337 (2023), <https://arxiv.org/abs/2306.16664>
6. Lyall, S., Blake, C. **Turner R. J.**, Ruggeri, R., *Testing modified gravity scenarios with direct peculiar velocities*, MNRAS 518, 5929 (2023), <https://arxiv.org/abs/2211.07101>
7. **Turner, R. J.**, Blake, C., Ruggeri, R., *A local measurement of the growth rate from peculiar velocities and galaxy clustering correlations in the 6dF Galaxy Survey*, MNRAS 518, 2436 (2023), <https://arxiv.org/abs/2207.03707>
8. Driver, S. P., Bellstedt, S., Robotham, A. S. G., Baldry, I. K., Davies, L. J., Hashemizadeh, A., Koushan, S., ... , **Turner, R. J.**, ... , Wilkins, S. W., *Galaxy And Mass Assembly (GAMA): Data Release 4 and the $z < 0.1$ total and $z < 0.08$ morphological galaxy stellar mass functions*, MNRAS 513, 439 (2022), <https://arxiv.org/abs/2203.08539>

9. **Turner, R. J.**, Blake, C., Ruggeri, R., *Improving estimates of the growth rate using galaxy-velocity correlations: a simulation study*, MNRAS 502, 208 (2021), <https://arxiv.org/abs/2101.09026>
10. Bellstedt, S., Driver, S. P., Robotham, A. S. G., Davies, L. J. M., Bogue, C. R. J., Cook, R. H. W., Hashemizadeh, A., Koushan, S., Taylor, E. N., Thorne, J. E., **Turner, R. J.**, Wright, A. H., *Galaxy And Mass Assembly (GAMA): assimilation of KiDS into the GAMA database*, MNRAS 496, 3235 (2020), <https://arxiv.org/abs/2005.11215>

Conferences & Workshops – (*) indicates that I gave a talk at this event

(*) OzGrav Retreat <i>3 minute spotlight presentation & panel discussion</i>	Brisbane, Australia <i>Dec. 2024</i>
DESI Collaboration Meeting	Marseille, France <i>Jul. 2024</i>
DESI Collaboration Meeting	Durham, UK <i>Jul. 2023</i>
(*) MIAPbP Extragalactic Distance Scales workshop <i>In person presentation</i>	Garching, Germany <i>Jul. 2023</i>
(*) Cosmology from Home 2022 <i>Prerecorded video</i>	Online conference <i>Jul. 2022</i>
(*) Astronomical Society of Australia ASM 2022 <i>In person presentation</i>	Hobart, Australia <i>Jul. 2022</i>
Summer School in Astrostatistics & Astroinformatics	Online, Penn State University <i>Jun. 2022</i>
Cosmology from Home 2021	Online conference <i>Jul. 2021</i>
Growth of Structure Summer Seminar Series	Online conference <i>Jun. 2021</i>
(*) Cosmic Flows, Large-Scale Structure & Visualisations <i>In person presentation</i>	Stellenbosch, South Africa <i>Feb. 2020</i>

Invited Talks

- Feb. 2025 - Cosmic Flows 2025: Probing the Universe with Peculiar Velocities
- Jul. 2024 - Colloquium at Aix-Marseille University
- Jul. 2024 - Colloquium at Clermont Auvergne University
- Jul. 2023 - MIAPbP Extragalactic Distance Scales workshop
- Sep. 2021 - ICRAR-UWA MSc Physics Open Day

Collaborations

OzGrav Team Member <i>ARC Centre of Excellence</i>	<i>Apr. 2024 – Present</i>
4MOST Science Team Member <i>4MOST Hemisphere Survey of the Nearby Universe (4HS)</i>	<i>Jun. 2023 – Present</i>
Dark Energy Spectroscopic Instrument Team Member <i>Transients and Low-z Cosmology Working Group (TLZ)</i>	<i>Dec. 2021 – Present</i>

Teaching

Student mentoring

Swinburne University of Technology

2022 – Present

- PhD co-supervisor to one student, have mentored 3 others
- Mentored 4 Honours students, all of which went on to PhD positions

Work Experience Supervisor

Swinburne University of Technology

Dec. 2023

- Planned and delivered a 5-day work experience program for a group of 11 high-school students from various backgrounds

Lab Demonstrator

Swinburne University of Technology

Aug. 2021 – Oct. 2021

Professional Activities

Chair of DESI groups

Jan. 2024 – Present

- Co-chair of “Growth of structure with peculiar velocities” topical group as of Oct. 2024
- Acting chair of the TLZ working group when co-chairs are unavailable

CAS Postdoctoral Representative

Jun. 2024 – Present

MSc (Astronomy & Astrophysics) student representative

ICRAR-UWA

Feb. 2017 – Jun. 2018

Proposals

ADACS 2024A Proposal

Q1/Q2 2024

- Awarded 1100 kSU on the ozstar/Ngarngu Tindebeek supercomputer for the project “Testing cosmic expansion and gravity”, designed to generate 1000 simulations for cosmological analysis

Outreach

Science comedy performance

Melbourne International Comedy Festival

Apr. 2024

- Wrote and performed a 10-minute comedy presentation about my research to a sold-out crowd at Science Gallery Melbourne

CAS Open Day Volunteer

Swinburne University of Technology

2019 – Present

AstroTour Guide

Swinburne University of Technology

2019 – 2023

- Led 10+ AstroTour presentations for students in primary school, secondary school and at undergraduate level, as well as for the public

Article published in The Conversation

The best gift in the galaxy: an astronomer’s guide to buying a home telescope

Dec. 2020

- Over 43 000 readers

Scitech volunteer

Scitech, West Perth

Oct. 2018 – Feb. 2019

ICRAR outreach volunteer

ICRAR-UWA

Feb. 2017 – Oct. 2018

Skills

- **Programming languages:** R, python (*fluent*); C/C++, SQL (*familiar*)
- **OS:** Windows, Unix, macOS
- **Software:** Mathematica, TOPCAT, R statistical packages, standard python packages