RYAN JAMES TURNER

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

Education

PhD in Astrophysics — Melbourne, Australia
Swinburne University of Technology — *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 — Perth, Australia
University of Western Australia (UWA) — *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 — Perth, Australia
University of Western Australia — *Feb. 2013 – Dec. 2016*

Professional Experience

Postdoctoral Research Associate — Melbourne, Australia
Swinburne University of Technology — *36 months funding (Feb. 2023 – Feb. 2026)*

First-Author Publications

1. **Turner, R. J.**, *Cosmology with Peculiar Velocity Surveys*, arXiv pre-print (2024), https://arxiv.org/abs/2411.19484
2. **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
3. **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
4. **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

See **ADS** for a full list of all of my publications

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

(*) OzGrav Retreat — Brisbane, Australia
3 minute spotlight presentation & panel discussion — *Dec. 2024*

- "Combining cosmology with standard sirens"

DESI Collaboration Meeting — Marseille, France
Jul. 2024

DESI Collaboration Meeting — Durham, UK
Jul. 2023

(*) MIAPbP Extragalactic Distance Scales workshop Garching, Germany
In person presentation *Jul. 2023*

- "Probing cosmological growth and expansion with peculiar velocities"

(*) Cosmology from Home 2022 Online conference
Prerecorded video *Jul. 2022*

- "Testing the cosmological model using the growth rate in the local universe"

(*) Astronomical Society of Australia ASM 2022 Hobart, Australia
In person presentation *Jul. 2022*

- "Testing the cosmological model using the growth rate in the local universe"

Summer School in Astrostatistics & Astroinformatics Online, Penn State University
Jun. 2022

Cosmology from Home 2021 Online conference
Jul. 2021

Growth of Structure Summer Seminar Series Online conference
Jun. 2021

(*) Cosmic Flows, Large-Scale Structure & Visualisations Stellenbosch, South Africa
In person presentation *Feb. 2020*

- "Peculiar velocities as a probe of dark energy"

Invited Talks

- 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
- Aug. 2021 - University of Melbourne Astrophysics Colloquium

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Collaborations

OzGrav Team Member
Apr. 2024 – Present

4MOST Science Team Member
4MOST Hemisphere Survey of the Nearby Universe (4HS) *Jun. 2023 – Present*

Dark Energy Spectroscopic Instrument Team Member
Transients and Low-z Cosmology Working Group (TLZ) *Dec. 2021 – Present*

Teaching

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*

Physics Show Demonstrator
University of Western Australia *Jun. 2017 – Dec. 2017*

Professional Activities

DESI Topical Group Co-Lead
"Growth of structure with peculiar velocities" group within TLZ working group *Oct. 2024 – Present*

DESI TLZ Working Group Acting Chair
When needed

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/Ngarrgu 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