Dylan Paterson

Curriculum Vitae

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Education

2015-2020 **PhD**, *Physics*, *University of Canterbury,Christchurch, New Zealand*.
Thesis: Astrophysical Contributions to the *Fermi* Galactic Centre GeV Excess

2014 **BSc Hons**, *Physics*, *University of Canterbury,Christchurch, New Zealand*.
Dissertation: Diffusion of Ultra High Energy Cosmic-Rays *GPA: 8.56/9.0*

2011-2013 **BSc**, *Astronomy*, *University of Canterbury,Christchurch, New Zealand*.
GPA: 5.90/9.0

Teaching

2020 Lecturer for PHYS111: Introductory Physics for Physical Sciences and Engineering, University of Canterbury

2014-2019 While studying at the University of Canterbury, I have been a teaching assistant (tutor and/ or lab assistant) for a variety of courses, including;

PHYS111: Introductory Physics for Physical Sciences and Engineering, PHYS101: Engineering Physics, PHYS102: Modern Physics, ASTR112: Astrophysics, PHYS208: Computer Programming and Statistics for Physical Sciences, ASTR211: Observational Astronomy

Outreach

2018-2019 Dark Sky Project, Lake Tekapo

I was a consultant on behalf of the University of Canterbury for the science content of the recently opened *Dark Sky Project* in Lake Tekapo. I worked directly with Ngāi Tahu, providing resources about the astronomical research at the University of Canterbury Mount John Observatory that are accessible to the general public.

2017-2018 Elaine P. Snowden Astronomy School, University of Canterbury

I was an assistant at the Elaine P. Snowden Astronomy School, an introductory camp for New Zealand senior high school students that are interested in studying astronomy at the University of Canterbury

2017 Aoraki Mackenzie Starlight Festival, Aoraki Mt. Cook Village

I was a volunteer at the Aoraki Starlight Festival 2017, where I operated solar telescopes for public viewing

Technical Skills

Programming Python, C, R, Matlab, SQL

Software LaTeX, MS Word, MS Excel, MS Powerpoint

Coursework

Bayesian Statistics, Quantum Mechanics, Quantum Field Theory, Electromagnetism, General Relativity, Structure and Evolution of Galaxies, Stellar Structure and Evolution, Cosmology, Statistical and Particle Physics, Lie Groups and Algebras, Rings and Fields

Publications

2020 The structure in front of the Galactic bar traced by red clump stars in the VVV survey, Preprint

2020 Maximum Entropy Estimation of the Milky Way Bulge Morphology via the VVV Red Clump, *Monthly Notices of the Royal Astronomical Society*

2018 Galactic bulge preferred over dark matter for the Galactic centre gamma-ray excess, *Nature Astronomy*

Conference Presentations

2019 *Galactic bulge preferred over dark matter for the galactic center gamma-ray excess*, New Zealand Institute of Physics

2018 *Morphology of the Milky Way Bulge with VVV*, Royal Astronomical Society of New Zealand

2017 *The diffuse Galactic gamma-ray background*, Royal Astronomical Society of New Zealand