James W. Gardner

EMAIL: james.gardner@anu.edu.au ◇ MOBILE: +61 0481 114 667
◇ WEB: https://jamesgardner.info/

Education

The Australian National University (ANU), Canberra ACT, Australia 2018–2021
Bachelor of Philosophy (Honours) in Science with First Class Honours in Physics
Improving future gravitational-wave detectors using nondegenerate internal squeezing
Thesis available at https://jamesgardner.info/

Narrabundah College, Canberra ACT, Australia 2016–2017
Achieved an ATAR of 99.90

Awards and scholarships

Australian Government Research Training Program Domestic Scholarship 2022

ANU Supplementary Scholarship 2022

ANU Achievement Prize for Third Year Physics 2020

ANU Dean's Science Education Commendation Award 2020

ANU National University Scholarship 2018–2021

Employment

Summer Research Intern (40 hours per week)
ANU Centre for Gravitational Astrophysics (CGA)
Analytic modelling of quantum optics configurations December 2021–January 2022
Experimental optics work in the CGA GW Laboratory December 2020– February 2021

Teaching

Science Mentors ACT (pro bono) 2019

Research

Research interests

Quantum optics, gravitational waves, quantum squeezing

Publications

James W. Gardner, Hannah Middleton, Changrong Liu, Andrew Melatos, Robin Evans, William Moran, et al., Accepted December 2021, *Continuous gravitational waves in the lab: recovering audio signals with a table-top optical microphone*, American Journal of Physics. Paper available upon request.

Presentations

OzGrav - Data/Astrophysics meeting February 2022
Continuous gravitational waves in the lab: recovering audio signals with a table-top optical microphone

LIGO-Virgo-KAGRA Collaboration - Interferometer simulation group December 2020
Verification of the newly-added non-linear element in Finesse for optical modelling of advanced gravitational-wave detector configurations

Membership

The LIGO Scientific Collaboration (LSC - OzGrav - ANU group) 2022–present

The ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav - ANU node) 2020–present

The Centre for Gravitational Astrophysics 2020–present
Research School of Physics and Research School of Astronomy and Astrophysics, ANU

ANU Advanced Studies Courses

These were semester-long, undergraduate research projects.

Optical modelling of advanced gravitational-wave detector configurations 2020

Developing tools to explain gravitational-wave science to a non-specialist audience 2019–2020

Cross identification of radio astronomy objects using machine learning 2019

Quantifying the velocity structure in turbulent rotating molecular clouds 2018–2019

References are available upon request.
Updated: February 4, 2022