

# James W. Gardner

EMAIL: james.gardner@anu.edu.au  $\diamond$  MOBILE: +61 0481 114 667  
 $\diamond$  WEB: <https://jamesgardner.info/>

## Education

Doctor of Philosophy (PhD) in Physics 2022–present<sup>†</sup>  
The Australian National University (ANU), Canberra ACT, Australia<sup>‡</sup>  
<sup>†</sup> Offer accepted April 2022, commencing June 2022  
<sup>‡</sup> Involving close collaboration with and visits to The California Institute of Technology (Caltech), Pasadena CA, USA.

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

## Awards and scholarships

Yale Physics PhD offer (with funded tuition and stipend) 2022  
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

Research Officer Grade 5/6 (35 hours per week)  
ANU Centre for Gravitational Astrophysics (CGA)  
*Benchmarking of future gravitational-wave detector networks* February–June 2022  
Summer Research Intern (35 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., 2022, *Continuous gravitational waves in the lab: recovering audio signals with a table-top optical microphone*, American Journal of Physics. Paper available upon request or at <https://doi.org/10.1119/10.0009409>

### Presentations

LIGO-Virgo-KAGRA Collaboration - Joint meeting of the advanced interferometer configurations, quantum noise, and laser and auxiliary working groups March 2022  
*Nondegenerate internal squeezing*

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

### Media

SciTechDaily April 2022  
*Continuous Gravitational Waves in the Lab*

References are available upon request.

Updated: April 15, 2022