

# James W. Gardner

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## Education

Australian National University (ANU), Canberra A.C.T., Australia	2018–2021
Bachelor of Philosophy (Honours) in Science with First Class Honours in Physics	
<i>Improving future gravitational-wave detectors using nondegenerate internal squeezing</i>	
Thesis is available at <a href="https://jamesgardner.info/">https://jamesgardner.info/</a> .	
Narrabundah College, Canberra A.C.T., 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	
Experimental optics work in the CGA GW Laboratory	December 2020– February 2021
Analytic modelling of quantum optics configurations	December 2021–present

## 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: recover-*

*ing audio signals with a table-top optical microphone*, American Journal of Physics. Paper available upon request.

## **Presentations**

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 ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav) 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: December 21, 2021