Shanika Galaudage

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Education

Doctor of Philosophy | Monash University — Feb 2019 – Nov 2022 (expected)
Research: gravitational waves, compact binaries, population studies
Supervisors: Eric Thrane and Ilya Mandel

Bachelor of Science Advanced – Research (Honours) | Monash University — 2018
Majors: Astrophysics and Physics – 1st class honours
Thesis: Searching for X-ray pulsations for gravitational wave candidates.
Supervisors: Duncan Galloway and Karl Wette

Awards, Prizes + Scholarships

Student Poster Award | ACAMAR7 workshop — 2021
Awarded for best poster (by Australian University student)

LAAC Student Poster Prize | LIGO Laboratory — 2021
Awarded for best poster (Data analysis/theory category)

J. L. William PhD Scholarship | Monash University — 2019 - present

Research Training Program (RTP) Stipend | Australian Government — 2019 - present

Astrophysics Top Honours Student Prize | Monash University — 2018

ECR / Student Travel Award | OzGrav — 2018

J. L. William Honours Scholarship | Monash University — 2018

Conferences, Presentations + Workshops

Public Webinar | LIGO/Virgo Collaboration (Virtual) - *YouTube* – Panellist — Dec 2021
The population of merging compact binaries inferred using gravitational waves through GWTC-3

ACAMAR 7 Workshop | ACAMAR (Virtual) – *Poster* – Winner — Nov 2021
Heavy double neutron stars: birth, midlife and death

Collaboration Meeting | LIGO/Virgo/KAGRA (Virtual) – *Poster* – Winner — Sep 2021
Building better spin models for merging binary black holes

Orange Pulsar Meeting | Australasian Pulsar group (Virtual) — Aug 2021
Heavy double neutron stars: birth, midlife and death

Nuclear burning in Massive Stars Workshop | YITP + OzGrav (Virtual) - Invited Talk — Jul 2021
LIGO-Virgo observations of gravitational waves: The emerging picture of the binary black hole population

Edoardo Amaldi Conference on Gravitational Waves | OzGrav + IUPAP (Virtual) — Jul 2021
Heavy double neutron stars: birth, midlife and death

Annual Scientific Meeting | Astronomical Society of Australia (Virtual) — Jul 2021
Population Properties of Compact Objects from GWTC2

Open Data Workshop #4 | LIGO (Virtual) – Invited Talk — May 2021
Parameter Estimation with Bilby

Gravitational Wave group presentation | University of Queensland (Virtual) – Invited Talk — Apr 2021
Population properties of binary black holes: Results from LIGO/Virgo O3a

ECR Australia Seminar series | ASTRO3D (Virtual) – *YouTube* — Mar 2021
Population properties of binary black holes: Results from LIGO/Virgo O3a

Collaboration Meeting | LIGO/Virgo/KAGRA (Virtual) – *Poster* – Honourable Mention — Mar 2021
Heavy double neutron stars: birth, midlife and death

Annual Meeting | Australian National Institute for Theoretical Astrophysics (Virtual) — Feb 2021
Heavy double neutron stars: birth, midlife and death

Public Webinar | LIGO/Virgo Collaboration (Virtual) - *YouTube* – Invited Speaker — Nov 2020
Population Properties of Compact Objects from the Second LIGO-Virgo Gravitational-Wave Transient Catalog

School of Physics and Astronomy colloquium | Monash University (Virtual) — Oct 2020
Population properties of binary black holes: Results from LIGO/Virgo O3a

Annual Scientific Meeting | Astronomical Society of Australia (Virtual) — Jul 2020
Gravitational Wave inference in the catalogue era

Annual Scientific Meeting | Astronomical Society of Australia — Jul 2019
Selection Effects in Gravitational Wave Astronomy

Parameter Estimation F2F workshop | LIGO PE Group — Feb 2019

Annual Scientific Meeting | Astronomical Society of Australia — Jul 2018
Searching for X-ray pulsations from Low Mass X-ray Binaries

Outreach + Engagement

International Women's Day event | Casey Tech School + OzGrav — Mar 2022
Science demonstrations and conservations with year 9/10 students about research journey.

Looking into the past with gravitational waves and spinning black holes | Space Australia – *Article* — Nov 2021

Childcare presentation | Good Start Early Learning (Virtual) — Nov 2021
Talk on about the solar system called 'Help Boo get to Earth' for 3-4 year olds

Public talk | Astronomical Society of Victoria (Virtual) – *YouTube* — Oct 2021
Talk on Gravitational Waves to general audience

STEM Webinar | Mac. Robertson Girls' High School (Virtual) — Sep 2021
Participated as panel member for discussion on STEM career pathways

School Presentation | St Leonard's College (Virtual) — July 2021
Talk on 'Our Place in Space' to grade 3 students

Investigating the lives of double neutron stars | Space Australia – *Article* — May 2021

Gravitational waves and population studies | Astrophiz – *Podcast* — Apr 2021
A chat about my research journey and work in astrophysics.

IncludeHer representative | IncludeHer Movement — 2020 – present
A campaign to improve representation of women in high-school STEM courses.

MySci Program Volunteer | OzGrav + Monash Astrophysics — Feb 2020
Create & deliver a workshop for year 11/12 students about gravitational waves.

Outreach team member | OzGrav — 2019 - present
Active participant in outreach activities run by OzGrav including talks and science demonstrations.

Media

Record number of new gravitational waves offers game-changing window into universe | *The Guardian* Nov 2021

More gravitational waves detected than ever before | *Cosmos Magazine* Nov 2021

Black hole mergers? 44 confirmed, and counting | *Cosmos Magazine* Oct 2020

Service

Referee for ApJ 2021 – present

Media Advisory Committee – ECR representative | OzGrav 2021 – 2022
Ensuring voices of Early Career Researchers are heard and represented for media related opportunities.

Women in Physics and Astronomy Committee | Monash University 2020 – 2021
Organising events and coordinating a mentoring program. Creating a supportive environment for women.

Publications

First author (4)

Galaudage, S., Wette, K., Galloway, D. K., and Messenger, C., Deep searches for X-ray pulsations from Scorpius X-1 and Cygnus X-2 in support of continuous gravitational-wave searches, (2022) MNRAS 501, 1745

Galaudage, S., Talbot, C., Nagar, T., Jains, D., Thrane, E. and Mandel, I., Building better spin models for merging binary black holes: Evidence for non-spinning and rapidly spinning nearly aligned sub-populations, (2021) ApJL 921, L15

Galaudage, S., Adamcewicz, C., Zhu, X.-J., Stevenson, S. and Thrane, E., Heavy double neutron stars: birth, mid-life and death, (2021) ApJL 909, L19

Galaudage, S., Talbot, C. and Thrane, E., Gravitational-wave inference in the catalog era: evolving priors and marginal events, (2020) PRD 102, 083026

Co-author (3)

Farah, A. M., Fishbach, M., Essick, R., Holz, D. E., **Galaudage, S.,** Bridging the Gap: Categorizing Gravitational-Wave Events at the Transition Between Neutron Stars and Black Holes, Submitted ApJ (2021) arXiv:2111.03498

Essick, R., Farah, A. M., **Galaudage, S.,** Talbot, C., Fishbach, M., Thrane, E., Holz, D. E., Probing Extremal Gravitational-Wave Events with Coarse-Grained Likelihoods, (2022) ApJ 926, 34

Romero-Shaw, I. M., Talbot, C., Biscoveanu, S., D'Emilio, V., Ashton, G., Berry, C. P. L., Coughlin, S., **Galaudage, S.,** et al., (51 authors), Bayesian inference for compact binary coalescences with BILBY: validation and application to the first LIGO-Virgo gravitational-wave transient catalogue, (2020) MNRAS 499 3295
Bilby and BilbyPipe developer; contribution to online Bilby (pipeline from trigger to parameter estimation).

Collaboration (2)

The following collaboration publications are ones that I have made a significant contribution to. I am also part of numerous publications as part of the LIGO Scientific Collaboration.

The LIGO Scientific Collaboration; the Virgo Collaboration, The KAGRA Scientific Collaboration (incl. **Galaudage, S.**) The population of merging compact binaries inferred using gravitational waves through GWTC-3, (2021) arXiv:2111.03634
Member of paper writing team; contribution to review and analyses of results.

The LIGO Scientific Collaboration; the Virgo Collaboration, (incl. **Galaudage, S.**) Population properties of compact objects from the second LIGO-Virgo Gravitational-Wave Transient Catalog, (2021) ApJL 913 L7
Member of paper writing team; contribution to analyses and astrophysical interpretation of results.

Teaching Experience

Teaching Associate | Monash University 2018 – present

ASP1010 - Earth to cosmos, Introductory astronomy
ASP2062 - Introduction to astrophysics
ASP3051 - Relativity and cosmology
PHS1001 - Foundation physics
PHS1011 - Classical physics and relativity
PHS1022 - Fields and quantum physics
BMS1031 - Medical biophysics