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## EMPLOYMENT

JUN 2022- Herchel Smith Research Fellow *University of Cambridge*  
 FEB-APR 2022 Research Fellow *Monash University*

## EDUCATION

NOV 2018 - FEB 2022 Ph.D.: *Eccentricity in Gravitational-Wave Transients.* *Monash University*  
 Supervisors: Assoc. Prof. Paul Lasky & Prof. Eric Thrane  
 2013-18 B.A. and M.Sci. Physics with Honours, Class I, *University of Birmingham*  
 Supervisor: Prof. Andreas Freise

## INVITED TALKS

2025 University of Bristol *Astrophysics Seminar*  
 - University of Nottingham *Particle Cosmology and Gravity Seminar*  
 - IIT Madras *Eccentricity Workshop*  
 2024 University of Sussex *Astronomy Colloquium*  
 - Southampton University *Gravity Seminar*  
 - Queen Mary University of London *IPAX Conference, Panel*  
 - Leiden Workshop *Panel Chair*  
 - University of Birmingham *Seminar*  
 - University of Cambridge *Kavli Institute for Cosmology Seminar*  
 - University of Milano-Bicocca *Black Hole Populations Conference, Panel*  
 - University of Wisconsin-Milwaukee *Seminar*  
 2023 Madrid Instituto de Física Teórica *COSMO'23, Plenary*  
 - Cardiff University *Gravity Exploration Centre Seminar*  
 - Albert Einstein Institute, Max Planck Institute, Potsdam *Seminar*  
 - Northwestern University *CIERA Seminar*  
 - Queen Mary University of London *Seminar*  
 - National Observatory (Brazil) *Webinar*  
 2022 Melbourne *GWPAW 2022 Conference Talk & Panel*  
 - University of Cambridge *(Data Intensive Science, Cosmology, KICC Frontiers) Seminars*  
 - University of Amsterdam *Anton Pannekoek Institute Colloquium*  
 2021 Niels Bohr Institute *Conference on Dynamical Binary Black Hole Formation*  
 - CSIRO Australia Telescope National Facility *Seminar*  
 - OzGrav Centre of Excellence for Gravitational-Wave Discovery *Seminar*  
 - Massachusetts Institute of Technology *Seminar*  
 - California Institute of Technology *TAPIR Seminar*  
 - Royal Astronomical Society *Poster Prize Acceptance & Explainer*  
 - University of Queensland *Seminar*  
 2020 OzGrav Centre of Excellence for Gravitational-Wave Discovery *Seminar*  
 - University of Santiago de Compostela *Colloquium*  
 - Monash University School of Physics and Astronomy *Colloquium*

## PRIZES, AWARDS &amp; SCHOLARSHIPS

2023 *Honourable Mention: Charlene Heisler Prize* *Astronomical Society of Australia*  
 - *Rising Star Award* *OzGrav Centre of Excellence for Gravitational Wave Discovery*  
 2022 *Honourable Mention: GWIC-Braccini Prize* *Gravitational Wave International Committee*  
 - *Robert Street Prize* *Monash University, School of Physics & Astronomy*  
 For "the best PhD thesis awarded through the School of Physics and Astronomy"  
 2021 *Norris Family Award* *Monash University, Faculty of Science.*  
 For "outstanding author contribution by a graduate student to published scholarly research output"  
 2020 *Homeward Bound Membership* *STEMM Leadership Initiative*  
 - *Outreach Award* *OzGrav Centre of Excellence for Gravitational Wave Discovery*  
 - *ECR Poster Prize* *Royal Astronomical Society*  
 2019 *Student Poster Award* *OzGrav Centre of Excellence for Gravitational Wave Discovery*  
 - *Student Talk Award* *Astronomical Society of Australia*  
 2018 *J.L. William International Scholarship* *Monash University, School of Physics and Astronomy*  
 - *Dean's International Postgraduate Scholarship* *Monash University, Faculty of Science*  
 - *International Postgraduate Research Scholarship* *Monash University*  
 - *Nolan Merrill Prize* *University of Birmingham*  
 For "the highest-scoring M.Sci. project in the School of Physics & Astronomy"  
 - *M.Sci. Poster Prize, School of Physics & Astronomy* *University of Birmingham*

## SUPERVISION &amp; TEACHING

- ▷ Supervision:
  - Salman Khan (Cambridge). Data Intensive Science MPhil project: *Reproducing Third Gravitational Wave Transient Catalogue Population Inference*
  - Daniel Gibson (Cambridge). Part III Mathematics MPhil project: *Understanding Neutron Stars with Future Gravitational-Wave Detector Networks*
  - Joshua Sharkey (Cambridge). Summer student project: *Wrong Model, Right Answer: Recovering traces of dynamical binary black hole formation from gravitational-wave data*
  - Samir Goorachurn (McGill). Summer student project: *Eccentricities of Binary Black Holes with Circumbinary Disks*
  - Ajinkya Naik (Pune). Summer student project: *Spins of Binary Black Holes from High Mass X-Ray Binaries*
  - Teagan Clarke (Monash). Honours (Masters) project: *Gravitational Waves from Eccentric Binary Black Holes*
- ▷ Problem Class Leading (Cambridge):
  - Statistical Uncertainty Quantification for Infosys
- ▷ Teaching Assistance / Lab / Workshop Leading (Monash):
  - Introductory Astronomy, Introduction to Astrophysics, Computational Astrophysics & the Extreme Universe

## ACADEMIC SERVICE

2019-	Referee	<i>Nature Astronomy, PRD, MNRAS, ApJ, ApJ Letters</i>
2018-	Eccentricity Task Force, internal paper reviews, paper writing	<i>LVK Collaboration</i>
2023	Gravitational Waves Session Co-convenor	<i>National Astronomy Meeting (UK)</i>
2023	LOC, Conferences: Rubin/LSST, Astrostats/ML	<i>Kavli Institute Cambridge</i>
2022-2023	Organiser: GR Seminar, GR Journal Club, Theory Colloquia	<i>University of Cambridge</i>
2020-22	Steering Committee	<i>Australian National Institute for Theoretical Astrophysics</i>
2019	Women in Physics & Astronomy Student Co-Chair	<i>Monash University</i>
2018	Board of Misconduct Student Rep.	<i>University of Birmingham</i>
2013-18	Student Rep.	<i>University of Birmingham</i>

## OUTREACH

**Publications & Articles**

2021	<i>Women in Physics, Colouring book</i> ; co-author, editor, and illustrator
2020	<i>Planetymology: Why Uranus is not called George and other facts about space and words, Children's non-fiction book</i> ; author, editor, and illustrator
-	<i>The CO2 Elephant in the Room: Curbing the Carbon Footprint of Astronomy, Astrophysics article</i>

**Media Interviews**

PODCASTS	<i>The Science Pawdcast</i>
-	<i>Astrophiz</i>
-	<i>Storytellers of STEMM</i>
-	<i>Listening to the Cosmos (LIGO India)</i>
RADIO	<i>Einstein A Go-Go, Triple R</i>
-	<i>The Space Show, Southern FM</i>
ARTICLES	<i>Space Australia</i>
-	<i>Monash University Science</i>

**Public Talks**

2024	Taunton Astronomy Society (UK)
-	Bath Royal Literary & Scientific Institution (UK)
2023	Astronomy on Tap Chicago (US)
2022	U3A Deepdene (Australia; virtual)
2021	GWTC-3 Webinar
-	Astronomical Society of Victoria (Australia)
-	Denver Astronomical Society (US; virtual)
2020	Mount Burnett Observatory (Australia)
-	OzGrav Public Lecture Series (Australia)
2019	Mount Burnett Observatory (Australia)

**Kid's Talks & Outreach Visits**

2024	City Academy Bristol with We The Curious (UK)
2022	Casey Tech School with OzGrav (Australia)
-	Haileybury Middle School for Women's Day (Australia)
2021	Girlguiding (UK; virtual talk)
-	Cambridge Festival (UK; virtual talk)

RESEARCH PUBLICATIONS: SHORT-AUTHOR	CITATIONS
[25] <a href="#">A Star Cluster Population of High Mass Black Hole Mergers in Gravitational Wave Data</a> — F. Antonini, <b>IRS</b> , T. Callister. Published in <i>PRL</i> , Jan 2025	9
[24] <a href="#">Eccentric Signatures of Stellar-Mass Binary Black Holes with Circumbinary Disks in LISA</a> — <b>IRS</b> , S. Goorachurn, M. Siwek, C. J. Moore. Published in <i>MNRAS Letters</i> , Oct 2024	2
[23] <a href="#">Gravitational-wave data analysis with high-precision numerical relativity simulations of boson star mergers</a> — T. Evstafjeva, U. Sperhake, <b>IRS</b> , M. Agathos. Published in <i>PRL</i> , Sep 2024	5
[22] <a href="#">Residual eccentricity as a systematic uncertainty on the formation channels of binary black holes</a> — G. Fumagalli, <b>IRS</b> , D. Gerosa, V. De Renzi, K. Kritos, A. Olejak. Published in <i>ApJ</i> , Sep 2024	12
[21] <a href="#">Detecting gravitational-wave bursts from black hole binaries in the Galactic Center with LISA</a> — A. Knee, J. McIver, S. Naoz, <b>IRS</b> , B-M. Hoang. Published in <i>ApJL</i> , Aug 2024	4
[20] <a href="#">Evidence for eccentricity in the population of binary black holes observed by LIGO-Virgo-KAGRA</a> — N. Gupte et al. (incl. <b>IRS</b> ). Submitted to <i>PRD</i> , Apr 2024	32
[19] <a href="#">Blind Spots and Biases: The dangers of ignoring eccentricity in gravitational-wave signals from binary black holes</a> — Divyajyoti, S. Kumar, S. Tibrewal, <b>IRS</b> , C. Mishra. Published in <i>PRD</i> , Feb 2024	24
[18] <a href="#">Double black hole mergers in nuclear star clusters: eccentricities, spins, masses, and the growth of massive seeds</a> — D. Chattopadhyay, J. Stegmann, F. Antonini, J. Barber, <b>IRS</b> . Published in <i>MNRAS</i> , Dec 2023	24
[17] <a href="#">Rapid population synthesis of black-hole high-mass X-ray binaries: implications for binary stellar evolution</a> — <b>IRS</b> , R. Hirai, A. Bahramian, R. Willcox, I. Mandel. Published in <i>MNRAS</i> , Sep 2023	11
[16] <a href="#">Inferring Interference: Identifying a Perturbing Tertiary with Eccentric Gravitational Wave Burst Timing</a> — <b>IRS</b> , N. Loutrel, M. Zevin. Published in <i>PRD</i> , Jun 2023	8
[15] <a href="#">Eccentricity or spin precession? Distinguishing subdominant effects in gravitational-wave data</a> — <b>IRS</b> , D. Gerosa, N. Loutrel. Published in <i>MNRAS</i> , Jan 2023	51
[14] <a href="#">Gravitational-wave inference for eccentric binaries: the argument of periapsis</a> — T. A. Clarke, <b>IRS</b> , P. D. Lasky, E. Thrane. Published in <i>MNRAS</i> , Dec 2022	15
[13] <a href="#">Subtracting glitches from gravitational-wave detector data during the third observing run</a> — D. Davis, T. B. Littenberg, <b>IRS</b> , M. Millhouse, J. McIver, F. Di Renzo, G. Ashton. Published in <i>Class. Quant. Grav.</i> , Dec 2022	52
[12] <a href="#">Four eccentric mergers increase the evidence that LIGO–Virgo–KAGRA’s binary black holes form dynamically</a> — <b>IRS</b> , P. D. Lasky, E. Thrane. Published in <i>ApJ</i> , Dec 2022	77
[11] <a href="#">General-relativistic precession in a black-hole binary</a> — M. Hannam et al. (incl. <b>IRS</b> ). Published in <i>Nature</i> , Oct 2022	87
[10] <a href="#">A Rosetta Stone for Eccentric Gravitational Waveform Models</a> — A. Knee, <b>IRS</b> , P. D. Lasky, J. McIver, E. Thrane. Published in <i>ApJ</i> , Sep 2022	33
[9] <a href="#">When models fail: an introduction to posterior predictive checks and model misspecification in gravitational-wave astronomy</a> — <b>IRS</b> , P. D. Lasky, E. Thrane. Published in <i>PASA</i> , Jun 2022	20
[8] <a href="#">Implications of Eccentric Observations on Binary Black Hole Formation Channels</a> — M. Zevin, <b>IRS</b> , K. Kremer, E. Thrane, P. D. Lasky. Published in <i>ApJ Letters</i> , Nov 2021	99
[7] <a href="#">Signs of Eccentricity in Two Gravitational-Wave Signals may Indicate a Sub-Population of Dynamically Assembled Binary Black Holes</a> — <b>IRS</b> , P. D. Lasky, E. Thrane. Published in <i>ApJ Letters</i> , Nov 2021	75
[6] <a href="#">Gravitational Waves as a Probe of Globular Cluster Formation and Evolution</a> — <b>IRS</b> , K. Kremer, P. D. Lasky, E. Thrane, J. Samsing. Published in <i>MNRAS</i> , Jul 2021	21
[5] <a href="#">An Interactive Gravitational-Wave Detector Model for Museums and Fairs</a> — S. Cooper et al. (incl. <b>IRS</b> ). Published in <i>Am. J. Phys.</i> , Jul 2021	3
[4] <a href="#">Bayesian Inference for Compact Binary Coalescences with BILBY: Validation and Application to the First LIGO-Virgo Gravitational-Wave Transient Catalogue</a> — <b>IRS</b> , C. Talbot, S. Biscoveanu, V. D’Emilio, G. Ashton et al. Published in <i>MNRAS</i> , Sep 2020	358
[3] <a href="#">GW190521: Orbital Eccentricity and Signatures of Dynamical Formation in a Binary Black Hole Merger Signal</a> — <b>IRS</b> , P. Lasky, E. Thrane, J. Calderón Bustillo. Published in <i>ApJ Letters</i> , Oct 2020	235
[2] <a href="#">On the origin of GW190425</a> — <b>IRS</b> , N. Farrow, S. Stevenson, X-J. Zhu, E. Thrane. Published in <i>MNRAS Letters</i> , May 2020	65
[1] <a href="#">Searching for Eccentricity: Signatures of Dynamical Formation in the First Gravitational-Wave Transient Catalogue of LIGO and Virgo</a> — <b>IRS</b> , P. Lasky, E. Thrane. Published in <i>MNRAS</i> , Oct 2019	126

## RESEARCH PUBLICATIONS: LARGE COLLABORATION

CITATIONS

I list here publications to which I have actively contributed.

To see all papers upon which I am listed as an author, please visit my [ADS bibliography](#).

- [7] [Observation of Gravitational Waves from the Coalescence of a 2.5 – 4.5 Msun Compact Object and a Neutron Star](#) — *The LVK Collaboration (incl. **IRS**)*. Submitted to *ApJ*, Apr 2024. Contribution: Internal review of parameter estimation results and presentation. 108
- [6] [Population of Merging Compact Binaries Inferred using Gravitational Waves through GWTC-3](#) — *The LVK Collaboration (incl. **IRS**)*. Published in *PRX*, Mar 2023. Contribution: Internal review of population spin analysis. 940
- [5] [GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Part of the Third Observing Run](#) — *The LVK Collaboration (incl. **IRS**)*. Published in *PRX*, Dec 2023. Contribution: Member of the paper-writing team. Event analysis, writing, result presentation. 2068
- [4] [Population Properties of Compact Objects from the Second LIGO-Virgo Gravitational-Wave Transient Catalog](#) — *The LVK Collaboration (incl. **IRS**)*. Published in *ApJ Letters*, May 2021. Contribution: Internal review of population spin analysis. 835
- [3] [GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run](#) — *The LVK Collaboration (incl. **IRS**)*. Published in *PRX*, Apr 2021. Contribution: Analysis of strain data surrounding one event trigger. 1957
- [2] [Neutron Star Extreme Matter Observatory: A Kilohertz-Band Gravitational-Wave Detector in the Global Network](#) — *OzGrav: K. Ackley et al. (incl. **IRS**)*. Published in *PASA*, Nov 2020. Contribution: Research into efficacy of GW detector network including Australian instrument for observing binary neutron stars. 177
- [1] [A cryogenic silicon interferometer for gravitational-wave detection](#) — *R. X. Adhikari et al. (incl. **IRS**)*. Published in *CQG*, Aug 2020. Contribution: Created one of the numerical models used to simulate noise at gravitational-wave interferometers. 159