# ERIC THRANE

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## EDUCATION

**University of Washington, Seattle, WA** *2003–2008*
PhD, Physics
*A Search for Astrophysical Neutrino Point Sources with Super-Kamiokande*
Advisor: R Jeffrey Wilkes

**University of Michigan, Ann Arbor, MI** *1999–2003*
BS, Physics with Highest Honors (& BA, Philosophy)
*Flat Electron Beam Dynamics: A Comparison of Data with Simulation*
Advisor: David Gerdes

## RESEARCH INTERESTS

Astrophysics, gravitational waves, cosmology

## WORK EXPERIENCE

**Professor** 2020–
*School of Physics & Astronomy, Monash University* *Clayton, VIC*

**Chief Investigator** 2024–2031
*ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav 2)* *Clayton, VIC*

**Associate Professor** 2018–2019
*School of Physics & Astronomy, Monash University* *Clayton, VIC*

**Data Theme Leader** 2017–2024
*ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav)* *Clayton, VIC*

**Senior Lecturer** 2017–2018
*School of Physics & Astronomy, Monash University* *Clayton, VIC*

**Lecturer** 2015–2016
*School of Physics & Astronomy, Monash University* *Clayton, VIC*

**Senior Postdoctoral Scholar** 2012–2014
*Division of Physics, California Institute of Technology* *Pasadena, CA*

**Postdoctoral Research Associate** 2008–2012
*Dept. of Physics & Astronomy, University of Minnesota* *Minneapolis, MN*

## AWARDS & FELLOWSHIPS

**Probing CP violation with Hyper-K** 2025–2028

- $634K AUD with Prof Phil Urquijo; DP250100373

**A Transdimensional Approach to Gravitational-Wave Astronomy** 2023–2026

- $460K AUD with AProf Paul Lasky; DP230103088

**The ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav 2)** 2024–2031

- $35M AUD for 23 researchers; CE230100016

**ARC Linkage Infrastructure, Equipment and Facilities (LIEF; LE210100002)** 2021

- Australian Partnership in Advanced LIGO+ ($3M AUD for 12 investigators)

**Rising stars (*The Australian*)** 2019

- Australia's top 40 researchers who are less than 10 years into their careers

**The ARC Centre of Excellence for Gravitational Wave Discovery (OzGrav)** 2016–2023

- $31M AUD for 19 researchers; CE170100004

**Breakthrough Prize in Fundamental Physics** 2016

- $2M USD split between members of the LIGO Scientific Collaboration

**Gruber Cosmology Prize** 2016

- Ron Drever, Kip Thorne, Rai Weiss, and the LIGO Science Collaboration

**ARC Future Fellowship (FT150100281)** 2015–2019

- Gravitational-wave astronomy: detection and beyond ($618K AUD)

**Ken Young Fellow** 2003
*University of Washington* *Seattle, WA*

**Graduated with Highest Honors** 2003
*University of Michigan* *Ann Arbor, MI*

## SELECT PUBLICATIONS

With significant personal contribution; my group members are highlighted in bold.

★ = lead and/or corresponding author


[1] **A. M. Baker**, P. D. Lasky, E. Thrane, and J. Golomb, *Significant challenges for astrophysical inference with next-generation gravitational-wave observatories*, (2025) arxiv/2503.04073.

[2] **H. Tong**, M. Fishbach, and E. Thrane, *Spinning spectral sirens: Robust cosmological measurement using mass-spin correlations in the binary black hole population*, *Accepted in Astrophys. J.* (2025) arxiv/2502.10780.

[3] **V. Di Marco**, A. Zic, R. M. Shannon, E. Thrane, and A. D. Kulkarni, *Choosing suitable noise models for nanohertz gravitational-wave astrophysics*, (2025) arxiv/2502.04653.

[4] **T. A. Clarke**, P. D. Lasky, and E. Thrane, *Inferring jet physics from neutron star - black hole mergers with gravitational waves*, *Astrophys. J.* **984** (2025) 27.

[5] **N. Guttman**, P. D. Lasky, and E. Thrane, *Modelling noise in gravitational-wave observatories with transdimensional models*, *Accepted in Phys. Rev. D* (2025) arxiv/2501.03285.

[6] **L. Pinchbeck**, C. Balazsa, and E. Thrane, *Model-independent dark matter detection with the cherenkov telescope array observatory*, (2024) arxiv/2412.17172.

[7] K. Grunthal, **R. S. Nathan**, *et al.*, *The MeerKAT pulsar timing array: Maps of the gravitational-wave sky with the 4.5 year data release*, *Mon. Not. R. Ast. Soc.* **536** (2024) 1501.

[8] M. Miles *et al.*, *The MeerKAT Pulsar Timing Array: The first search for gravitational waves with the MeerKAT radio telescope*, *Mon. Not. R. Ast. Soc.* (2024) .

[9] Z.-Q. You *et al.*, *Determination of the birth-mass function of neutron stars from observations*, *Nat. Astro.* **457** (2025) 2397.

[10] **S. R. Goode**, M. Schiworski, D. Brown, E. Thrane, and P. D. Lasky, *You only thermoelastically deform once: Point Absorber Detection in LIGO Test Masses with YOLO*, *Optics Express* **33** (2025) 17601 Featured in Spotlight on Optics.

[11] **T. A. Clarke**, N. Sarin, E. J. Howell, P. D. Lasky, and E. Thrane, *Quantifying the coincidence between gravitational waves and fast radio bursts from neutron star–black hole mergers*, *Phys. Rev. D* **11** (2025) 083023.

[12] **C. Adamcewicz**, P. D. Lasky, E. Thrane, and I. Mandel, *No evidence for a dip in the binary black hole mass spectrum*, *Astrophys. J.* **975** (2024) 253.

[13] **L. Passenger**, E. Thrane, P. D. Lasky, E. Payne, S. Stevenson, and B. Farr, *Are all models wrong? falsifying binary formation models in gravitational-wave astronomy*, *Accepted in Mon. Not. R. Ast. Soc.* (2024) arxiv/2405.09739.

[14] **S. Y. Cheung**, P. D. Lasky, and E. Thrane, *Does spacetime have memories? Searching for gravitational-wave memory in the third LIGO-Virgo-KAGRA gravitational-wave transient catalogue*, *Class. Quantum Grav.* **41** (2024) 115010.

[15] The LVK Collaborations, *Observation of gravitational waves from the coalescence of a $2.5 - 4.5 M_\odot$ compact object and a neutron star*, (2024) arxiv/2404.04248.

[16] **H. Tong** *et al.*, *Transdimensional inference for gravitational-wave astronomy with `Bilby`*, *Astrophys. J. Supp.* **276** (2025) 50.

[17] **V. Di Marco**, A. Zic, R. M. Shannon, and E. Thrane, *Systematic errors in searches for nanohertz gravitational waves*, *Mon. Not. R. Ast. Soc.* **532** (2024) 4026.

[18] **T. A. Clarke**, M. Isi, P. D. Lasky, E. Thrane, *et al.*, *Striking the right tone: towards a self-consistent framework for measuring black hole ringdowns*, *Phys. Rev. D* **109** (2024) 124030.

[19] **L. Pinchbeck**, E. Thrane, and C. Balazs, *GammaBayes: a Bayesian pipeline for dark matter detection with CTA*, *J. Cosmo. R. Ast. Part.* **2024** (2024) 020.

[20] **K. Walker**, **R. Smith**, E. Thrane, and D. J. Reardon, *Precision constraints on the neutron star equation of state with third-generation gravitational-wave observatories*, *Phys. Rev. D* **110** (2024) 043013.

[21] **C. Adamcewicz**, P. D. Lasky, and E. Thrane, *Which black hole is spinning? probing the origin of black-hole spin with gravitational waves*, *Astrophys. J. Lett.* **964** (2024) L6.

[22] J. W. Gardner, L. Sun, S. Borhanian, P. D. Lasky, E. Thrane, D. E. McClelland, and B. J. J. Slagmolen, *Multi-messenger astronomy with a southern-hemisphere gravitational-wave observatory*, *Phys. Rev. D* **108** (2023) 123026.

[23] **C. Adamcewicz**, P. D. Lasky, and E. Thrane, *Evidence for a correlation between binary black hole mass ratio and black-hole spins*, *Astrophys. J.* **958** (2023) 13.

[24] D. J. Reardon *et al.*, *Search for an isotropic gravitational-wave background with the parkes pulsar timing array*, *Astrophys. J. Lett.* **951** (2023) L6.

[25] **V. Di Marco**, A. Zic, M. T. Miles, D. J. Reardon, E. Thrane, and R. M. Shannon, *Toward robust detections of nanohertz gravitational waves*, *Astrophys. J.* **956** (2023) 14 arxiv/2305.04464.

[26] **R. S. Nathan** *et al.*, *Improving pulsar-timing solutions through dynamic pulse fitting*, *Mon. Not. R. Ast. Soc.* **523** (2023) 4405.

[27] B. Allen *et al.*, *The international pulsar timing array checklist for the detection of nanohertz gravitational waves*, (2023) arxiv/2304.04767 ★.

[28] **T. A. Clarke**, L. Chastain, P. D. Lasky, and E. Thrane, *Nuclear physics with gravitational waves from neutron stars disrupted by black holes*, *Astrophys. J. Lett.* **949** (2023) L6.

[29] E. Payne and E. Thrane, *Model exploration in gravitational-wave astronomy with the maximum population likelihood*, *Phys. Rev. Res.* **5** (2023) 023013.

[30] J. Paynter and E. Thrane, *Meet the parents: the progenitor binary for the supermassive black hole candidate in E1821+643*, *Astrophys. J. Lett.* **945** (2023) L18.

[31] **H. Tong**, **S. Galaudage**, and E. Thrane, *The population properties of spinning black holes using Gravitational-wave Transient Catalog 3*, *Phys. Rev. D* **106** (2022) 103019.

[32] **C. Adamcewicz** and E. Thrane, *Do unequal-mass binary black hole systems have larger $\chi_{eff}$? Probing correlations with copulas in gravitational-wave astronomy*, *Mon. Not. R. Ast. Soc.* **517** (2022) .

[33] A. M. Knee, **I. M. Romero-Shaw**, P. D. Lasky, J. McIver, and E. Thrane, *A Rosetta Stone for eccentric gravitational waveform models*, *Astrophys. J.* **936** (2022) 172.

[34] **I. Romero-Shaw**, P. Lasky, and E. Thrane, *Four eccentric mergers increase the evidence that ligo–virgo–kagra's binary black holes form dynamically*, *Astrophys. J.* **940** (2022) 171.

[35] **T. A. Clarke**, **I. M. Romero-Shaw**, P. D. Lasky, and E. Thrane, *The birth mass function of neutron stars revealed by pulsar observations*, *Mon. Not. R. Ast. Soc.* **517** (2022) 3778.

[36] S. Biscoveanu, K. Kremer, and E. Thrane, *Probing the efficiency of tidal synchronization in outspiralling double white dwarf binaries with lisa*, *Astrophys. J.* **949** (2023) 95.

[37] B. Goncharov *et al.*, *Consistency of the PPTA signal with a nanohertz gravitational-wave background*, *Astrophys. J. Lett.* **932** (2022) L22.

[38] F. Broekgaarden, S. Stevenson, and E. Thrane, *Signatures of mass ratio reversal in gravitational waves from merging binary black holes*, *Astrophys. J.* **938** (2022) 45.

[39] **A. Makai** Baker, P. D. Lasky, E. Thrane, *et al.*, *GWCloud: a searchable repository for the creation and curation of gravitational-wave inference results*, *Astrophys. J. Supp.* **266** (2023) 33.

[40] **K. Walker**, D. J. Reardon, E. Thrane, and **R. Smith**, *Orbital dynamics and extreme scattering event properties from long-term scintillation observations of psr j16037202*, *Astrophys. J.* **933** (2022) 16.

[41] **A. Vajpeyi**, **R. Smith**, and E. Thrane, *Deep follow-up of GW151226: ordinary binary or low-mass-ratio system?*, *Astrophys. J.* **947** (2023) 10.

[42] **I. M. Romero-Shaw**, E. Thrane, and P. D. Lasky, *When models fail: an introduction to posterior predictive checks and model misspecification in gravitational-wave astronomy*, *Pub. Astron. Soc. Aust.* **39** (2022) E025 arxiv/2202.05479.

[43] N. Sarin, P. D. Lasky, **F. H. Vivanco**, S. P. Stevenson, D. Chattopadhyay, **R. Smith**, and E. Thrane, *Linking the rates of neutron star binaries and short gamma-ray bursts*, *Phys. Rev. D* **105** (2022) 083004.

[44] **A. Mangipudi**, E. Thrane, and C. Balazs, *Bayesian WIMP detection with the Cherenkov Telescope Array*, *J. Cosmo. R. Ast. Part.* **2022** (2022) 010.

[45] V. Kalogera *et al.*, *The Next Generation Global Gravitational Wave Observatory: The Science Book*, (2021) arxiv/2111.06990.

[46] R. Abbott *et al.*, *GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Part of the Third Observing Run*, *Phys. Rev. X* **13** (2023) 041039.

[47] R. Abbott *et al.*, *The population of merging compact binaries inferred using gravitational waves through GWTC-3*, *Phys. Rev. X* **13** (2023) 011048.

[48] R. Abbott *et al.*, *Constraints on the cosmic expansion history from GWTC-3*, *Astrophys. J.* **949** (2023) 76.

[49] **A. Vajpeyi**, E. Thrane, **R. Smith**, B. McKernan, and K. S. Ford, *Measuring the properties of active galactic nuclei disks with gravitational waves*, *Astrophys. J.* **931** (2022) 82.

[50] P. D. Lasky and E. Thrane, *Did goryachev et al. detect megahertz gravitational waves?*, *Phys. Rev. D* **104** (2021) 103017.

[51] **S. Galaudage**, C. Talbot, **T. Nagar**, D. Jain, E. Thrane, and I. Mandel, *Building better spin models for merging binary black holes: Evidence for non-spinning and rapidly spinning nearly aligned sub-populations*, *Astrophys. J. Lett.* **921** (2021) L15.

[52] R. Essick, A. Farah, **S. Galaudage**, C. Talbot, M. Fishbach, E. Thrane, and D. E. Holz, *Don't just leave-one-out: Probing extremal gravitational-wave events with coarse-grained likelihoods*, *Astrophys. J.* **926** (2022) 34.

[53] **I. M. Romero-Shaw**, P. D. Lasky, and E. Thrane, *Signs of eccentricity in two gravitational-wave signals may indicate a sub-population of dynamically assembled binary black holes*, *Astrophys. J. Lett.* **921** (2021) L31.

[54] **E. Payne**, L. Sun, K. Kremer, P. D. Lasky, and E. Thrane, *The imprint of superradiance on hierarchical black hole mergers*, *Astrophys. J.* **931** (2022) 79.

[55] B. Goncharov *et al.*, *On the evidence for a common-spectrum process in the search for the nanohertz gravitational wave background with the Parkes Pulsar Timing Array*, *Astrophys. J. Lett.* **917** (2021) L19.

[56] **A. Vajpeyi**, **R. Smith**, E. Thrane, *et al.*, *A search for intermediate-mass black holes mergers in the second LIGO–Virgo observing run with the Bayes Coherence Ratio*, *Mon. Not. R. Ast. Soc.* **516** (2022) 5309.

[57] B. McKernan, K. E. S. Ford, T. Callister, W. M. Farr, R. O'Shaughnessy, **R. Smith**, E. Thrane, and **A. Vajpeyi**, *LIGO–Virgo correlations between mass ratio and effective inspiral spin: testing the active galactic nuclei channel*, *Mon. Not. R. Ast. Soc.* **514** (2022) 3886.

[58] **R. Willcox**, I. Mandel, E. Thrane, A. Deller, S. Stevenson, and A. Vigna-Gómez, *Constraints on weak supernova kicks from observed pulsar velocities*, *Astrophys. J. Lett.* **920** (2021) L37.

[59] R. Abbott *et al.*, *Observation of gravitational waves from two neutron starblack hole coalescences*, *Astrophys. J. Lett.* **915** (2021) L5.

[60] C. Talbot, E. Thrane, S. Biscoveanu, and **R. Smith**, *Inference with finite time series: Observing the gravitational Universe through windows*, *Phys. Rev. Res.* **3** (2021) 043049.

[61] M. Zevin, **I. M. Romero-Shaw**, K. Kremer, E. Thrane, and P. D. Lasky, *Implications of eccentric observations on binary black hole formation channels*, *Astrophys. J. Lett.* **921** (2021) L43.

[62] R. Abbott *et al.*, *Constraints on Cosmic Strings Using Data from the Third Advanced LIGO–Virgo Observing Run*, *Phys. Rev. Lett.* **126** (2021) 241102.

[63] **Z.-Q. You**, G. Ashton, **X.-J. Zhu**, E. Thrane, and Z.-H. Zhu, *Optimized localization for gravitational-waves from merging binaries*, *Mon. Not. R. Ast. Soc.* **509** (2021) 3957.

[64] **M. Hübner**, P. D. Lasky, and E. Thrane, *Memory remains undetected: Updates from the second LIGO/Virgo gravitational-wave transient catalog*, *Phys. Rev. D* **104** (2021) 023004.

[65] J. Paynter, R. Webster, and E. Thrane, *Evidence for an intermediate-mass black hole from a gravitationally lensed gamma-ray burst*, *Nat. Astron.* **5** (2021) 560.

[66] **R. Smith** *et al.*, *Bayesian inference for gravitational waves from binary neutron star mergers in third-generation observatories*, *Phys. Rev. Lett.* **127** (2021) 081102.

[67] **C. Talbot** and E. Thrane, *Fast, flexible, and accurate evaluation of malmquist bias with machine learning: Preparing for the pending flood of gravitational-wave detections*, *Astrophys. J.* **927** (2022) 76.

[68] **I. M. Romero-Shaw**, K. Kremer, P. D. Lasky, E. Thrane, and J. Samsing, *Gravitational waves as a probe of globular cluster formation and evolution*, *Mon. Not. R. Ast. Soc.* **506** (2021) 2362.

[69] C. Kimball, C. Talbot, C. P. Berry, M. Zevin, E. Thrane, *et al.*, *Evidence for hierarchical black hole mergers in the second LIGO–Virgo gravitational-wave catalog*, *Astrophys. J. Lett.* **915** (2021) L35.

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

[71] C. D. Blair, Y. Levin, and E. Thrane, *Constraining temperature distribution inside LIGO test masses from frequencies of their vibrational modes*, *Phys. Rev. D* **103** (2021) 022003.

[72] R. Abbott *et al.*, *GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run*, *Phys. Rev. X* **11** (2021) 021053.

[73] R. Abbott *et al.*, *Population properties of compact objects from the second LIGO-Virgo Gravitational-Wave Transient Catalog*, *Astrophys. J. Lett.* **913** (2021) L7 Focus Issue: Gravitational-wave Astrophysics from the Second LIGO-Virgo Transient Catalog.

[74] **B. Goncharov** *et al.*, *Identifying and mitigating noise sources in precision pulsar timing data sets*, *Mon. Not. R. Ast. Soc.* **502** (2020) 478.

[75] J. Calderón Bustillo, P. D. Lasky, and E. Thrane, *Black-hole spectroscopy, the no-hair theorem and GW150914: Kerr vs. Occam*, *Phys. Rev. D* **103** (2021) 024041.

[76] **E. Payne**, C. Talbot, P. D. Lasky, E. Thrane, and J. S. Kissel, *Gravitational-wave astronomy with a physical calibration model*, *Phys. Rev. D* **102** (2020) 122004.

[77] **I. M. Romero-Shaw**, P. D. Lasky, E. Thrane, and J. Calderón Bustillo, *GW190521: orbital eccentricity and signatures of dynamical formation in a binary black hole merger signal*, *Astrophys. J. Lett.* **903** (2020) L5 Norris Family Publication Award.

[78] **S. Biscoveanu**, **C. Talbot**, E. Thrane, and **R. Smith**, *Measuring the primordial gravitational-wave background in the presence of astrophysical foregrounds*, *Phys. Rev. Lett.* **125** (2020) 241101.

[79] R. Abbott *et al.*, *GW190521: A Binary Black Hole Merger with a Total Mass of* $150M_{\odot}$, *Phys. Rev. Lett.* **125** (2020) 101102.

[80] R. Abbott *et al.*, *Properties and Astrophysical Implications of the* $150M_{\odot}$ *Binary Black Hole Merger GW190521*, *Astrophys. J. Lett.* **900** (2020) L13.

[81] **F. Hernandez Vivanco**, **R. Smith**, E. Thrane, and P. D. Lasky, *A scalable random forest regressor for combining neutron-star equation of state measurements: A case study with GW170817 and GW190425*, *Mon. Not. R. Ast. Soc.* **499** (2020) 5972.

[82] K. Ackley *et al.*, (OzGrav), *Neutron Star Extreme Matter Observatory: A kilohertz-band gravitational-wave detector in the global network*, *Pub. Astron. Soc. Aust.* **37** (2020) e047.

[83] R. Abbott *et al.*, (LIGO–Virgo), *GW190814: Gravitational Waves from the Coalescence of a 23 Solar Mass Black Hole with a 2.6 Solar Mass Compact Object*, *Astrophys. J. Lett.* **896** (2020) L44.

[84] **E. Payne**, S. Banagiri, P. Lasky, and E. Thrane, *Searching for anisotropy in the distribution of binary black hole mergers*, *Phys. Rev. D* **102** (2020) 102004.

[85] C. Talbot and E. Thrane, *Gravitational-wave astronomy with an uncertain noise power spectral density*, *Phys. Rev. Res.* **2** (2020) 043298.

[86] G. Ashton and E. Thrane, *The astrophysical odds of GW151216*, *Mon. Not. R. Ast. Soc.* **498** (2020) 1905.

[87] **I. M. Romero-Shaw**, **C. Talbot**, S. Biscoveanu, *et al.*, *Bayesian inference for compact binary coalescences with BILBY: Validation and application to the first LIGO–Virgo gravitational-wave transient catalogue*, *Mon. Not. R. Ast. Soc.* **499** (2020) 3295.

[88] C. Kimball, **C. Talbot**, C. P. L. Berry, M. Carney, M. Zevin, E. Thrane, and V. Kalogera, *Black hole genealogy: Identifying hierarchical mergers with gravitational waves*, *Astrophys. J.* **900** (2020) 177.

[89] **X.-J. Zhu** and E. Thrane, *Toward the unambiguous identification of supermassive binary black holes through Bayesian inference*, *Astrophys. J.* **900** (2020) 117.

[90] **R. J. E. Smith**, **C. Talbot**, **F. Hernandez Vivanco**, and E. Thrane, *Inferring the population properties of binary black holes from unresolved gravitational waves*, *Mon. Not. R. Ast. Soc.* **496** (2020) 3281.

[91] B. P. Abbott *et al.*, (LIGO–Virgo), *GW190412: Observation of a Binary-Black-Hole Coalescence with Asymmetric Masses*, *Phys. Rev. D* **102** (2020) 043015.

[92] **Z.-Q. You**, **X.-J. Zhu**, G. Ashton, E. Thrane, and Z.-H. Zhu, *Standard-siren cosmology using gravitational waves from binary black holes*, *Astrophys. J.* **908** (2020) 215.

[93] **I. M. Romero-Shaw**, **N. Farrow**, S. Stevenson, E. Thrane, and **X.-J. Zhu**, *On the origin of GW190425*, *Mon. Not. R. Ast. Soc. Lett.* **496** (2020) L64.

[94] B. P. Abbott *et al.*, (LIGO–Virgo), *GW190425: Observation of a Compact Binary Coalescence with Total Mass* $\sim 3.4M_{\odot}$, *Astrophys. J. Lett.* **892** (2020) L3.

[95] **S. Galaudage**, **C. Talbot**, and E. Thrane, *Gravitational-wave inference in the catalog era: evolving priors and marginal events*, *Phys. Rev. D* **102** (2019) 083026.

[96] **M. Hübner**, **C. Talbot**, P. D. Lasky, and E. Thrane, *Thanks for the memory: measuring gravitational-wave memory in the first LIGO/Virgo gravitational-wave transient catalog*, *Phys. Rev. D* **101** (2020) 023011.

[97] **A. K. Divakarla**, E. Thrane, P. D. Lasky, and B. F. Whiting, *Memory Effect or Cosmic String? Classifying Gravitational-Wave Bursts with Bayesian Inference*, *Phys. Rev. D* **102** (2020) 023010.

[98] **S. Biscoveanu**, E. Thrane, and S. Vitale, *Constraining short gamma-ray burst jet properties with gravitational waves and gamma rays*, *Astrophys. J.* **893** (2020) 38.

[99] E. Thrane, S. Osłowski, and P. D. Lasky, *Ultra-relativistic astrophysics using multi-messenger observations of double neutron stars with LISA and the SKA*, *Mon. Not. R. Ast. Soc.* **493** (2020) 5408 ★.

[100] **B. Goncharov**, **X.-J. Zhu**, and E. Thrane, *Is there a spectral turnover in the spin noise of millisecond pulsars?*, *Mon. Not. R. Ast. Soc.* **497** (2020) 3264.

[101] G. Ashton, E. Thrane, and **R. J. E. Smith**, *Gravitational wave detection without boot straps: a Bayesian approach*, *Phys. Rev. D* **100** (2019) 123018.

[102] **I. M. Romero-Shaw**, P. D. Lasky, and E. Thrane, *Searching for Eccentricity: Signatures of Dynamical Formation in the First Gravitational-Wave Transient Catalogue of LIGO and Virgo*, *Mon. Not. R. Ast. Soc.* **490** (2019) 5210.

[103] **F. Hernandez Vivanco**, **R. J. E. Smith**, E. Thrane, P. D. Lasky, **C. Talbot**, and V. Raymond, *Measuring the neutron star equation of state with gravitational waves: the first forty binary neutron star mergers*, *Phys. Rev. D* **100** (2019) 103009.

[104] S. Banagiri, M. W. Coughlin, J. Clark, P. D. Lasky, M. A. Bizouard, **C. Talbot**, E. Thrane, and V. Mandic, *Constraining the gravitational-wave afterglow from a binary neutron star coalescence*, *Mon. Not. R. Ast. Soc.* **492** (2020) 4945.

[105] **E. Payne**, **C. Talbot**, and E. Thrane, *Higher order gravitational-wave modes with likelihood reweighting*, *Phys. Rev. D* **100** (2019) 123017.

[106] **C. Talbot**, **R. J. E. Smith**, E. Thrane, and G. B. Poole, *Parallelized Inference for Gravitational-Wave Astronomy* , *Phys. Rev. D* **100** (2019) 043030.

[107] B. P. Abbott *et al.*, (LIGO–Virgo), *Directional limits on persistent gravitational waves using data from Advanced LIGO's first two observing runs*, *Phys. Rev. D* **100** (2019) 062001.

[108] **F. Hernandez Vivanco**, **R. J. E. Smith**, E. Thrane, and P. D. Lasky, *Accelerated detection of the binary neutron star gravitational-wave background*, *Phys. Rev. D* **100** (2019) 043023.

[109] B. P. Abbott *et al.*, (LIGO–Virgo), *A search for the isotropic stochastic background using data from Advanced LIGO's second observing run*, *Phys. Rev. D* **100** (2019) 061101(R).

[110] B. S. Sathyaprakash *et al.*, *Astro2020 science white paper: Cosmology and the early universe*, 2019. arxiv/1903.09260.

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## TELESCOPE PROPOSALS

**MeerKAT** (PI: R. Shannon) — 588 hours over two years
*The MeerKAT Pulsar Timing Array* — *2025–2027*

## RECENT TALKS

**Australian National University RSAA** — June 2024
*Results from the 4.5 year MeerKAT Pulsar Timing Array Data Release* — *Mt Stromlo, ACT*

**IPTA Meeting** — June 2024
*Mapping the nanohertz gravitational-wave sky* — *Sexton, Italy*

**GWADW** — May 2024
*Astrophysics in the Era of neXt-Generation Observatories* — *Hamilton Island, QLD*

**IAU-IAA Astrostats Seminar** — August 2022
*Investigating black hole spin with gravitational waves* — *Online*

**Frontiers of Fundamental Physics** — May 2022
*Merging compact binaries inferred using gravitational waves through GWTC-3* — *Istanbul, Turkey*

**Association of Asia Pacific Physical Societies** — October 2021
*Building better spin models for merging binary black holes* — *Seoul, South Korea*

**University of Melbourne** — September 2021
*Building better models for populations of merging binary black holes* — *Melbourne, VIC*

**University of Michigan** — March 2021
*Population Properties of Compact Objects from GWTC-2* — *Ann Arbor, MI*

**University of New South Wales** — December 2020
*Compact objects in the Second LIGO-Virgo Gravitational-wave Transient Catalog* — *Sydney, NSW*

**University of Canterbury** — December 2020
*Population Properties from the Second LIGO-Virgo Catalog* — *Canterbury, NZ*

**LIGO-Virgo Webinar** — November 2020
*Population Properties of Compact Objects from the Second LIGO-Virgo Catalog* — *Online*

**University of Auckland** — October 2020
*The population properties of binary black holes with Bayesian hierarchical modelling* — *Auckland, NZ*

**CSIRO Astronomy & Space Science** — July 2020
*Dispatches from the black hole mass gaps: recent results from LIGO-Virgo* — *Marsfield, NSW*

## LEADERSHIP & SERVICE

### Referee

Astronomy & Astrophysics, Astrophysical Journal, Astrophysical Journal Letters, Journal for Cosmology and Astroparticle Physics, Living Reviews in Relativity, Monthly Notices of the Royal Astronomical Society, Nature Astronomy, Nature Communications, Physical Review Applied, Physical Review D, Physical Review Letters

### Reviewer

- Australian Research Council, Swiss National Science Foundation, Royal Society Te Apārangi (New Zealand), US National Science Foundation

### Advisory

- NCA Time Domain and Multi-Messenger Astrophysics Working Group Chair (2024), AAL Project Oversight Committee (2024–2025), ASA Time-Domain Astronomy Steering Committee, IPTA Detection Committee (2021–2023), NCA MTR CapOp (2019), AAL Science Advisory (2018–2020), Gravitational wave Optical Transient Observatory (2016–)

### LIGO Scientific Collaboration

- Co-Chair of Stochastic Data-Analysis Group (2011–2017), Review Chair for Burst Group (2017–2020), Editorial Board (2019–)

### Organising Committees

- ASA SOC 2019; GWPAW SOC (2018, 2021, 2022); AGCGRG SOC 2021; GWPAW LOC 2022

### Diversity

- LVC Ally (2018–), OzGrav Diversity Committee (2017–)

## MEDIA

My group's work has been featured in a number of publications including *The Independent*, *The Sydney Morning Herald*, *The Australian*, CNET, and *The Guardian*. I have discussed my research on radio and television programs including *The 7:30 Report*, *Catalyst*, 3AW radio.

## OUTREACH

I regularly give public lectures on black holes and gravitational waves. Recent talk venues include MIT Lincoln Lab, the AIP Nobel Prize Public Lecture, and an Instant Expert event organised by New Scientist.

## TEACHING & EDUCATION

### Monash University 2015–

- PHS1011 (First-Year Physics): Unit Coordinator
- PHS1022 (First-Year Physics): Unit Coordinator
- PHS4200 (General Relativity)
- PHS5020 (Advanced General Relativity)

*Administrative roles*

- Postgraduate Research Coordinator 2022–
- Education Head 2015–2016

*Supervision*

- Research faculty
  - Dr Rory Smith 2017–2024
- Postdocs
  - Dr Gosia Curyło 2024–
  - Dr Sharan Banagiri 2024–
  - Dr Nir Guttman 2023–
  - Dr Simon Goode 2023–
  - Dr Grant Meadors 2018–2019
  - Dr Xingjiang Zhu 2017–2021
  - Dr Letizia Sammut 2015–2017
  - Dr Pablo Rosado 2016
- Postgraduate Students
  - Andrew Atta 2024–
  - Lachlan Passenger 2024–
  - Liam Pinchbeck 2023–
  - Shun Cheung 2023–
  - Valentina DiMarco 2022–
  - Hui Tong 2022–
  - Christian Adamcewicz 2022–
  - Teagan Clarke 2022–
  - Rowina Nathan 2022–
  - Avi Vajpeyi 2020–2023
  - Shanika Galaudage 2019–2023
  - Isobel Romero-Shaw 2018–2021
    - Winner: Robert Street Doctoral Prize
  - Moritz Hübner 2018–2021
  - Francisco Hernandez 2017–2021
  - Colm Talbot 2016–2020
    - Winner: Vice-Chancellors Commendation for Thesis Excellence
    - Winner: Charlene Heisler Prize for the most outstanding astronomy PhD thesis in Australia
    - Winner: Robert Street Doctoral Prize
  - Boris Goncharov 2016–2020
  - Sylvia Biscoveanu (Fulbright) 2017–2018
- Honours/MSc Students
  - Makai Baker 2024
  - Chan Anand 2024
  - Michelle Zhang 2024
  - Lachlan Passenger 2023
  - Nikhil Kannachel 2023
  - Jiaxuan Zhou 2022
  - Macauley Angus 2022
  - Tushar Nagar 2021
  - Kris Walker 2021
  - Abhi Mangipudi 2020–2021
  - Ethan Payne 2020

  - Winner: Australian Institute of Physics Laby Medal for the best Honours or Masters thesis from an Australian University

- Nick Farrow 2019
- Marcus Lower 2017
- Chris Whittle 2016
- Lucy McNeill 2016

· Undergraduate Students

- Emma Sapkin 2024
- Ella Garth 2024
- Jordan Klein 2022
- Carter Hills 2020
- Atul Divakarla (IREU from Florida) 2018
- Alex Kemp 2017
- William Campbell 2015
- Shi Qiu 2015
- Tyson Jones 2015