

Ilya Mandel

CONTACT INFORMATION

School of Physics and Astronomy, Monash University
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EDUCATION

California Institute of Technology, Pasadena, CA USA

Ph.D. in Physics (conferred June 2008)

- Dissertation Title: “The Three Ss of Gravitational Wave Astronomy: Sources, Signals, Searches”
- Advisor: Kip S. Thorne

M.S. in Physics, 2003

Stanford University, Stanford, CA USA

M.S. in Computer Science (Theory specialization), 2001

B.S. in Physics, with Distinction and Departmental Honors, 2000

ACADEMIC EXPERIENCE

Monash University, Australia

Professor of Astrophysics

2019 - present

University of Birmingham, UK

Honorary Professor

2019 - 2022

Professor of Theoretical Astrophysics

2016 - 2019

Senior Lecturer

2014 - 2016

Lecturer

2011 - 2014

NSF Astronomy & Astrophysics Postdoctoral Fellow

2009 - 2011

At Northwestern 9/2009-6/2010; at MIT 7/2010-8/2011.

Northwestern University, Evanston, IL USA

Postdoctoral Scholar in Theoretical Astrophysics

2007 - 2009

Mentor: Vicky Kalogera

California Institute of Technology, Pasadena, CA USA

Research Assistant

2006 - 2007

Teaching Assistant

2001 - 2006

Stanford University, Stanford, CA USA

Research Assistant, Gravity Probe B

1996 - 2003

Research and Teaching Assistant, Computer Science

1999

AWARDS

Clarivate “1 in 1000” highly cited researchers, 2023, 2024

Australian Research Council Future Fellow, 2019-2023

Elected Patron of Birmingham AstroSoc student society, 2017

Breakthrough Prize in Fundamental Physics (part of LIGO team), May 2016

SAMSI (Statistical and Applied Mathematical Science Institute) Research Fellow, 2016–2017

College of Engineering and Physical Sciences paper of the month award, February 2016

Classical and Quantum Gravity highlights – most cited article in 2 years (“Predictions for the rates of compact binary coalescences observable by ground-based gravitational-wave detectors”), 2012

Head of School commendation letters for excellence in teaching (multiple years, 2013–2018)

Kevin Westfold Distinguished Visitor, Monash Center for Astrophysics, 2014
NSF Astronomy and Astrophysics Postdoctoral Fellowship
Dean's Award for Academic Achievement (excellence in research), Stanford University
Tau Beta Pi (engineering honor society) Member
National Merit Scholar, National Advanced Placement Scholar

SERVICE

International/national leadership:

Member, Australian Research Council College of Experts (2022 – current)
Aspen Center for Physics board member (2016 – current)
Gravitational-Wave International Committee 3G Science Case team member, Binaries working group co-chair (2017 – 2019)
President, IAU Binary and Multiple Star Systems Commission G1 (2024 – current); Vice President (2022 – 2024); Organising Committee Member (2018 – present)
International Society on General Relativity & Gravitation, Nominating Committee member (2016 – current)
Chair, steering committee of the Australian National Institute for Theoretical Astrophysics (ANITA; 2020 – 2024 [deputy chair, 2019-2020])
Councillor, Astronomical Society of Australia (2019 – 2021)
Council member, International Astrostatistics Association (2021 – 2023)
International Statistics Institute (ISI) Astrostatistics Special Interest Group Management Committee (2022 – current)
Science Meets Parliament representative, 2021

Journal editing and review, grant review:

Scientific Editor, AAS (Astrophysical Journal, ApJ Letters) (2021 – current)
Editor-in-Chief, Encyclopedia of Astrophysics (2023–2025)
Editorial Board member, Nature Scientific Data (2018 – 2024)
Reviewer for the Astrophysical Journal, Physical Review, Classical and Quantum Gravity, Monthly Notices of the Royal Astronomical Society, Philosophical Transactions of the Royal Society, Nature journals, Science (2008–current); Institute of Physics Trusted Reviewer (2020)
ARC College of Experts member (2022–2024)
Grant reviewer for NASA (USA; including as member of NASA Astrophysics Theory Grant Panel), NSF (USA), Hungarian Scientific Research Fund, STFC (UK), NWO (Netherlands Organisation for Scientific Research), European Research Council, CONICYT (Chile), ARC (Australia), CRC (Canada), Marsden grants (New Zealand) (2008–current)

Collaboration leadership/membership:

LIGO Scientific Collaboration member (2005–2016), LSC Council member (2012 – 2016)
LSC internal reviewer (2009 – 2016), intermediate mass black hole source group co-chair (2012 – 2016)
LISA Consortium Member
Mock LISA Data Challenge and Parameter Estimation Taskforce member
Einstein Telescope Science Working Group member
LOFT science team member
Member of several electromagnetic transient surveys (e.g., ePESSTO) and multi-messenger consortia for following up gravitational-wave signals (e.g., ENGRAVE, where I co-chair the Populations theory group)

Meeting organisation:

SOC member, inaugural South African GW workshop (2011)

Convener of relativistic astrophysics session, GR-20 (2013)
 Co-organizer and SOC co-chair, “Science with the first gravitational-wave detections” (2013)
 Lead organizer, Aspen Center for Physics Workshop on Ultra-compact Binaries as Laboratories for Fundamental Physics (2014)
 Main organizer and SOC chair, Gravitational-wave Astrophysics meeting at COSPAR (2014)
 Program Leader, SAMSI Program on Statistical, Mathematical and Computational Methods for Astronomy (2016-2017)
 Main organizer and SOC chair, Massive Binary Evolution meeting at COSPAR (2016 [cancelled because of current events in Turkey])
 Organizer, SAMSI workshop on Astrophysical Population Emulation and Uncertainty Quantification (2017)
 SOC member, Alpine Cosmology Workshop (2017 – current)
 Co-director, Kavli Summer Program in Astrophysics 2017: Astrophysics with gravitational wave detections (2017)
 Co-organizer and SOC co-chair, Lorentz Center Workshop “And then there was light: Electromagnetic signatures of stellar mass binary black hole mergers” (2017)
 Co-organizer, Munich Institute for Astro- and Particle Physics program “Precision gravity: from the LHC to LISA” (2019)
 SOC Member, EAS Symposium “What have we learned from the observed population of gravitational wave sources?” (2020)
 Astronomical Society of Australia 2020 (virtual) science meeting organizer
 ANITA 2021 workshop (virtual) lead organiser
 SOC co-chair, EAS session “Where are the BH-NS binaries?” (2021)
 SOC member, GWPAW 2021
 SOC member, Nuclear burning in massive stars: towards the formation of binary black holes (2021)
 SOC member, Designing the Next-Generation EHT to Transform Black Hole Science (2021)
 Lead organizer and SOC chair, Gravitational-Wave Physics and Astronomy Workshop, Melbourne (2022)
 Lead organizer, Aspen Center for Physics Workshop on Transients and Interacting Binaries (2023)
 SOC member, IAU Symposium 389: Gravitational Wave Astronomy, Cape Town, South Africa (2024)
 SOC member, GWPAW 2024
 SOC co-chair, Gravitational-Wave Snowballs, Sexten, Italy (2025)

Institutional contributions:

University of Birmingham astrophysics seminar organizer (2012–2015)
 University of Birmingham physics and astronomy colloquium organizer (2015–current)
 University of Birmingham head of graduate admissions for astronomy (2012 – current)
 University of Birmingham Faculty Senate representative elected for Engineering and Physical Sciences (2016 – current)
 School and College Equality and Diversity Committee member, University of Birmingham (2014 – 2017)
 Monash University astrophysics seminar and school colloquium co-organiser (2019)

MENTORING

Postdoctoral associates:

Trevor Sidery (2011 – 2013, co-mentored with Alberto Vecchio), gravitational-wave data analysis
 Walter del Pozzo (2013 – 2016), tests of general relativity with compact binaries; now faculty at University of Pisa
 Christopher Berry (2013 – 2017, co-mentored with Alberto Vecchio), astrostatistics; now faculty at University of Glasgow via research faculty at Northwestern
 Dorottya Szécsi (2017 – 2018), stellar evolution; now faculty in Nicolaus Copernicus University via Humboldt fellowship in Cologne

Tyrone Woods (2018), stellar and binary evolution; now Plaskett Fellow at the NRC Herzberg Astronomy and Astrophysics, Victoria, Canada
 Ryosuke Hirai (2019 – current), hydrodynamical modelling
 Evgeni Grishin (2021 – current), dynamics
 Isobel Romero-Shaw (2021 – 2022), X-ray binary population modelling; now Herchel Smith Fellow at the University of Cambridge
 Jin-Ping Zhu (2023 – current), kilonovae and gamma-ray bursts
 Jeff Riley (2023 – current), rapid binary population synthesis and machine learning
Post-graduate students:
 Vivien Raymond (2007 – 2012, co-advised with Vicky Kalogera), parameter estimation on spinning binaries; now faculty at Cardiff University via Albert Einstein Institute postdoc and Caltech postdoctoral prize fellowship
 Ben Farr (2009 – 2014, co-advised with V. Kalogera), MCMC techniques in LIGO data analysis; now faculty at University of Oregon via McCormick postdoctoral fellow at U. Chicago
 Carl Rodriguez (2010 – 2013, co-advised with V. Kalogera, then F. Rasio), signatures of deviations from Kerr spacetime; now faculty at Carnegie Mellon University via Pappalardo prize postdoc at MIT
 Rory Smith (2011 – 2013), intermediate-mass-ratio waveforms and rapid parameter estimation; now OzGrav postdoc at Monash via postdoc at Caltech
 Will Vousden (2011 – 2015), astrophysics with multi-messenger gravitational-wave detections, now at Oxford Asset Management
 Carl-Johan Haster (2012 – 2016), topics in gravitational-wave data analysis; now postdoc at MIT via CITA national fellowship, winner of Springer PhD thesis award
 Simon Stevenson (2013 – 2017), population synthesis of compact binaries; now OzGrav postdoc at Swinburne University
 Ben Bradnick (2015 – 2017, co-advised with W. Farr), galactic center dynamics; now at Tesella
 Serena Vinciguerra (2014 – 2018), advanced techniques for efficient parameter estimation; now postdoc at University of Amsterdam
 Jim Barrett (2015 – 2018, co-advised with W. Farr), emulators and machine learning; now in private-sector big data in Sweden
 Alejandro Vigna Gomez (2015 – 2019), mass transfer in stellar binaries; now postdoc at DARK, Copenhagen
 Coenraad Neijssel (2016 – 2022), formation of binary black holes across cosmic history
 Lucy McNeill (2019 – 2021, co-advised with B. Mueller), angular momentum transport in evolved stars
 Reinhold Willcox (2019 – 2022), neutron star kicks and dynamics
 Jeff Riley (2019 – 2023), massive stellar binary population synthesis
 Mike Lau (2019 – 2023), hydrodynamics modelling of common envelopes and planetary engulfment
 Tanner Wilson (2019 – 2023, co-advised with A. Casey), asteroseismology and differential rotation
 Fitz Hu (2023 – current, co-advised with D. Price), hydrodynamical modelling of tidal disruption events
 Adam Brcek (2024 – current), population synthesis modelling
 Seyed Tabasi (2024 – current), tidal disruption events
 Paul Disberg (2025 – current), binary neutron stars

Undergraduate and masters students:

Matthew Dodelson (2009) and Daniel Douglas (2010) testing GR with EMRIs
 Frederick Robinson (2009 – 2010), Fisher matrix analysis
 Luke Kelley (2010 – 2011, co-advised with Enrico Ramirez-Ruiz), electromagnetic counterparts to LIGO searches
 Alex Mellus and Benjamin Hubbert (2012), investigation of numerical waveform accuracy and parameter estimation tests of convergence
 Jason Tye (2012 – 2013), animations of gravitational waves, gravitational lensing of gravitational waves

Ben Bradnick and Hannah Middleton (2012 – 2013), progenitors of short gamma ray bursts; shared the Tesella Prize for best computational year 4 project, 2013

Zachary Hafen and Jenna Klemkowsky (2013), waveform accuracy requirements on hybrid waveforms and gravitational-wave event rate calculator

Kirsty Stroud and Chris Aldridge (2013 – 2014, co-advised with Will Farr), exoplanet properties in Kepler data

George King and Hasini Janapriya (2014 – 2015, co-advised with Will Farr), searching for exoplanets around red giants

Tom Riley, Ben Giblin (2014 – 2015, co-advised with Will Farr), short gamma ray bursts and time delays in binary mergers; Tom Riley earned prize for top 4th year project

Rajath Sathyaprakash and Morgan Brown (2015 – 2016), massive stellar evolution modeling

Andrea Colonna (2015 – 2016), clustering and inference, jointly with Computer Science

Kit Boyer and Fabian Gittins (2016 – 2017), modelling X-ray binaries

Gareth Thomas (2014 – 2017), searching for intermediate-mass-ratio inspirals

Dave Perkins (2016), analysis of population synthesis predictions

George Howitt (2017), visiting PhD student from Australia, luminous red novae

Kaila Nathaniel (2017), IREU student, chemically homogeneous evolution

Isobel Romero-Shaw (2017), impact of single stellar evolution on binary evolution

Luke Nugent (2017), mathematical modeling masters student, efficient population synthesis sampling

Alice Perry and Samuel Kingdon (2017– 2018), Be X-ray binaries as probes of supernovae and binary evolution

Nicholas Bennett and Samuel Ratcliff (2017– 2018, co-advised with Dorottya Szécsi), lithium abundances in globular clusters

Spencer Shortt and Ellen Butler (2018), chemically homogeneous evolution

Mike Lau (2018), compact binary observations with LISA

Floor Broekgaarden (2019, co-advised with Stephen Justham, Selma de Mink), adaptive importance sampling for population synthesis

Michelle Wassink (2019–2020, co-advised with Gijs Nelemans), expansion of stars after the helium main sequence

Joanna Shepherd (2020, co-advised with Daniel Price), extracting light curves from hydrodynamical simulations of tidal disruption events

Thillai Saravanan (2020–2022), the impact of initial conditions on binary evolution

Tushar Nagar (2021, co-advised with Eric Thrane), gravitational-wave source catalog population inference

Amir Kashapov (2021, co-advised with Ryo Hirai), late-time expansion of naked helium stars

Bayley Tranter (2021, co-advised with Ryo Hirai), few-body scattering experiments

Abhi Mangipudi (2021–2022, co-advised with Evgeni Grishin), non-orbit-averaged behaviour in hierarchical triples

Max Tory (2022, co-advised with Evgeni Grishin), stability of hierarchical triples

Andrew Atta (2022, co-advised with Ryo Hirai and Bernhard Müller), stripped red supergiants

Lewis Picker (2022–2023, co-advised with Ryo Hirai), two-stage common envelopes

Aadarsh Madhavan (2022), detectability of luminous red nova progenitors with LSST

Alvaro Jose Herrera (2022, co-advised with Ryo Hirai), IREU student, detached black-hole binaries in Gaia data

Lucas Confalonieri (2023, co-supervised with Evgeni Grishin), magnetic braking

COURSES TAUGHT	Classical Mechanics and Relativity (first-year, \gtrsim 200 students)
	Waves and Quantum Mechanics (first year, \sim 200 students)
	Inference on Scientific Data (fourth year, \sim 75 students)
	Introduction to General Relativity (third year, \sim 60 students)
	Relativistic Astrophysics and Black Holes (third- and fourth-year, \sim 50 students)
	Introduction to Astrophysics (first-year, \sim 50 students)

Introduction to Particle Physics and Cosmology (first-year, ~ 50 students)
 General Physics [back-of-the-envelope physics] (third-year, ~ 150 students)
 Group studies [research project] (third-year, 16 students)
 Observational Cosmology (third- and fourth-year, ~ 30 students)
 Gravitational-wave Astrophysics (graduate seminar, ~ 10 students)
 Advanced General Relativity (masters course)
 Order-of-magnitude Astrophysics (honours and masters course)

GRANTS

2024–2030	Australian Research Council Centre of Excellence for Gravitational-Wave Discovery OzGrav2 (total of AUD \$35M across OzGrav)
2022	Monash Faculty of Science Strategic Uplift Scheme (CI): <i>Advancing gravitational-wave astrophysics through machine learning</i> [AUD \$17k]
2022–2025	Australian Research Council LIEF grant for LSST support (Monash lead CI; total of AUD \$1.685M)
2019–2024	Australian Research Council Future Fellowship (PI): <i>Shining gravitational waves on binary astrophysics</i> [AUD \$936k from ARC, AUD \$996k in matching Monash funds]
2017–2023	Australian Research Council Centre of Excellence for Gravitational-Wave Discovery OzGrav (total of AUD \$31.3M across OzGrav)
2017–2020	NERC grant (Co-I): <i>Reducing Greenhouse Climate Proxy Uncertainty</i> [total value of grant £434k]
2016–2019	STFC Consolidated grant (Co-I): <i>Searching for intermediate mass ratio coalescences in Advanced LIGO/Virgo data</i> [total value of grant £1,834k]
2016–2019	STFC grant supporting UK Involvement in the Operation of Advanced LIGO (co-I) [£244k to Birmingham]
2016	RAS Undergraduate Bursary <i>Black holes in globular clusters</i> (PI) [£1200]
2015	Kevin Westfold Distinguished Visitor to Monash University, Melbourne, Australia [£12k support]
2015	RAS Undergraduate Bursary <i>Studying black holes with gravitational waves</i> (PI) [£1200]
2014	South African National Institute of Theoretical Physics (NITheP) long-term visitor grant [£2k]
2013–2017	FP7 Marie Curie Initial Training Network (Co-I): <i>GraWIToN</i> [total value to Birmingham £481k]
2013–2016	Leverhulme Trust Research Project Grant (PI): <i>Testing general relativity with ground-based gravitational-wave observations</i> [£162k]
2013–2016	STFC Consolidated grant (Co-I): <i>Gravitational wave observations of compact binary systems</i> [total value of grant £1,876k]
2013–2016	ASPERA grant (Co-I): <i>Networking and R&D for the Einstein Telescope</i> [salary and travel support, €59K]
2009–2011	NSF Astronomy and Astrophysics Postdoctoral Fellowship grant (PI): <i>Gravitational-wave astronomy: a new window on the universe</i> [\$249k]
2009–2002	NASA ATP grant (Co-I) <i>Binary White Dwarfs: Gravitational Wave Astrophysics and Data Analysis</i> [\$399k]

PROFESSIONAL SOCIETIES

Astronomical Society of Australia
 International Society on General Relativity and Gravitation lifetime member
 International Astrostatistics Association
 International Astronomical Union

1. M. Lau, M. Cantiello, A. Jermyn, M. MacLeod, I. Mandel, D. Price. 2022. Hot Jupiter engulfment by a red giant in 3D hydrodynamics. *A&A*, accepted. arXiv:2210.15848
2. L. A. C. van Son, S. K. Roy, I. Mandel, W. M. Farr, A. Lam, J. Merritt, F. S. Broekgaarden, A. Sander, J. J. Andrews. Winds of change: why binary black hole formation is metallicity dependent, while binary neutron star formation is not. *ApJ*, accepted. arXiv:2411.02484
3. C. Hoy, S. Fairhurst, I. Mandel. 2024. Precession and higher order multipoles in binary black holes (and lack thereof). *Phys. Rev. D*, accepted. arXiv:2408.03410
4. I. Mandel. 2024. Theoretical expectations for high-mass X-ray binaries, supernova remnants, and their evolutionary paths: An overview talk for LIAC41: the eventful life of stellar multiples. Accepted, *Bulletin de la Société Royale des Sciences de Liège*. arXiv:2410.07747
5. C. Adamcewicz, P. D. Lasky, E. Thrane, I. Mandel. 2024. No evidence for a dip in the binary black hole mass spectrum. *ApJ*, accepted. arXiv:2406.11111
6. P. Marchant, P. Podsiadlowski, I. Mandel. 2023. An upper limit on the spins of merging binary black holes formed through binary evolution. *A&A*, accepted. arXiv:2311.14041
7. T. Shenar et al. 2024. Binarity at LOw Metallicity (BLOeM): I. a spectroscopic VLT monitoring survey of massive stars in the SMC. *A&A* 690, A289. arXiv:2407.14593
8. J. Zhu, L. Liu, Y. Yu, I. Mandel, R. Hirai, B. Zhang, A. Chen. 2024. Bumpy Superluminous Supernovae Powered by Magnetar-star Binary Engine. *ApJL*, accepted. arXiv:2405.01224
9. D. J. Price, D. Liptai, I. Mandel, J. Shepherd, G. Lodato, Y. Levin. 2024. Eddington envelopes: The fate of stars on parabolic orbits tidally disrupted by supermassive black holes. *ApJL*, accepted. arXiv:2404.09381
10. L. Picker, R. Hirai, I. Mandel. 2024. Fits for the convective envelope mass in massive stars. *ApJ* 969, 1. arXiv:2402.13180
11. M. Lau, R. Hirai, I. Mandel, C. Tout. 2024. Expansion of accreting main-sequence stars during rapid mass transfer. *ApJL* 966, L7. arXiv:2401.09570
12. A. Vigna-Gómez, R. Willcox, I. Tamborra, I. Mandel, M. Renzo, T. Wagg, H.-T. Janka, D. Kresse, J. Bodensteiner, T. Shenar. 2024. Observational evidence for neutrino natal kicks from black-hole binary VFTS 243. *Phys. Rev. Lett.* 132, 191403. arXiv:2310.01509
13. S. J. Miller, M. Isi, K. Chatziioannou, V. Varma, I. Mandel. 2023. GW190521: tracing imprints of spin-precession on the most massive black hole binary. *Phys. Rev. D* 109, 024024. arXiv:2310.01544
14. F. Hu, D. Price, I. Mandel. 2024. Optical Appearance of Eccentric Tidal Disruption Events. *ApJL* 963, L27. arXiv:2312.03210
15. A. Levan et al. 2023. JWST detection of heavy neutron capture elements in a compact object merger. *Nature* 7, 976. arXiv:2307.02098
16. R. Willcox, M. MacLeod, I. Mandel, R. Hirai. 2023. The Impact of Angular Momentum Loss on the Outcomes of Binary Mass Transfer. *ApJ* 958, 138. arXiv:2308.06666
17. O. S. Salafia, M. E. Ravasio, G. Ghirlanda, I. Mandel. 2023. The short gamma-ray burst population in a quasi-universal jet scenario. *A & A* 680, A45. arXiv:2306.15488
18. A. Heger, B. Mueller, I. Mandel. 2023. Black holes as the end state of stellar evolution: Theory and simulations. Invited contribution to the *Encyclopedia of Black Holes*. arXiv:2304.09350
19. I. Romero-Shaw, R. Hirai, A. Bahramian, R. Willcox, I. Mandel. 2023. Rapid population synthesis of black-hole high-mass X-ray binaries: implications for binary stellar evolution. *MNRAS* 524, 245. arXiv:2303.05375
20. J. Riley, I. Mandel. 2023. Surrogate forward models for population inference on compact binary mergers. *ApJ* 950, 80. arXiv:2303.00508

21. I. Agudo et al. 2023. Panning for gold, but finding helium: discovery of the ultra-stripped supernova SN2019wxt from gravitational-wave follow-up observations. *A&A*, 675, A201. arXiv:2208.09000.
22. P. Short et al. 2023. Delayed Appearance and Evolution of Coronal Lines in the TDE AT2019qiz. *MNRAS*, accepted. arXiv:2307.13674
23. A. Levan et al. 2023. A long-duration gamma-ray burst of dynamical origin from the nucleus of an ancient galaxy. *Nature Astronomy* 7, 976. arXiv:2303.12912
24. T. Wilson, A. Casey, I. Mandel, E. Bellinger, G. Davies. 2023. What can rotational splittings of low-luminosity subgiants actually tell us about the rotation profile? *MNRAS* 521, 4122. arXiv:2111.10953
25. T. N. O’Doherty, A. Bahramian, J. C. A. Miller-Jones, A. J. Goodwin, I. Mandel, R. Willcox, P. Atri, J. Strader. 2023. An Observational Kick Distribution for 145 Neutron Stars in Binaries. *MNRAS* 521, 2504. arXiv:2303.01059
26. C. Kobayashi, I. Mandel, K. Belczynski, S. Goriely, T. Janka, O. Just, A. Ruiter, D. Vanbevereren, M. Kruckow, M. Briel, J. Eldridge, E. Stanway. 2023. Can neutron star mergers alone explain the r-process enrichment of the Milky Way? *ApJL* 943, L12. arXiv:2211.04964
27. I. Mandel, A. P. Igoshev. 2023. The impact of spin-kick alignment on the inferred velocity distribution of isolated pulsars. *ApJ* 944, 153. arXiv:2210.12305
28. V. Kapil, I. Mandel, E. Berti, B. Mueller. 2022. Calibration of neutron star natal kick velocities to isolated pulsar observations. *MNRAS* 519, 5893. arXiv:2209.09252
29. M. Tory, E. Grishin, I. Mandel. 2022. Empirical Stability Boundary for Hierarchical Triples. *PASA*, accepted. arXiv:2208.14005
30. P. Amaro-Seoane et al. 2023. Astrophysics with the Laser Interferometer Space Antenna. *Living Reviews in Relativity* 26, 2. arXiv:2203.06016
31. R. Hirai, I. Mandel. 2022. A two-stage formalism for common-envelope phases of massive stars. *ApJL* 937, L42. arXiv:2209.05328
32. O. S. Salafia, A. Colombo, F. Gabrielli, I. Mandel. 2022. Constraints on the merging binary neutron star mass distribution and equation of state based on the fraction of jets. *A&A* 666, A174. arXiv:2202.01656
33. M. Lau, R. Hirai, D. Price, I. Mandel. 2022. Common envelopes in massive stars II: The distinct roles of hydrogen and helium recombination. *MNRAS* 516, 4669. arXiv:2206.06411
34. A. Mangipudi, E. Grishin, A. Trani, I. Mandel. 2022. Extreme eccentricities of triple systems: Analytic results. *ApJ* 934, 44. arXiv:2205.08703
35. F. Broekgaarden et al. 2022. Impact of Massive Binary Star and Cosmic Evolution on Gravitational Wave Observations II: Double Compact Object Rates and Properties. *MNRAS*, accepted. arXiv:2112.05763
36. L. A. C. van Son, S. E. de Mink, T. Callister, S. Justham, M. Renzo, T. Wagg, F. S. Broekgaarden, F. Kummer, R. Pakmor, I. Mandel. 2022. The redshift evolution of the binary black hole merger rate: a weighty matter. *ApJ* 931, 17. arXiv:2110.01634
37. Team COMPAS: J. Riley et al. 2022. COMPAS: A rapid binary population synthesis suite. *The Journal of Open Science Software*. <https://joss.theoj.org/papers/10.21105/joss.03838>
38. I. Mandel, A. Farmer. 2022. Merging stellar-mass binary black holes. *Physics Reports* 955, 1. arXiv:1806.05820
39. A. Vigna-Gómez, M. Wassink, J. Klencki, A. Istrate, G. Nelemans, I. Mandel. 2022. Stellar response after stripping as a model for common-envelope outcomes. *MNRAS* 511, 2326. arXiv:2107.14526
40. M. Y. M. Lau, R. Hirai, M. González-Bolívar, D. J. Price, O. De Marco, I. Mandel. 2022. Common envelopes in massive stars: towards the role of radiation pressure and recombination energy in ejecting red supergiant envelopes. *MNRAS* 512, 5462. arXiv:2111.00923

41. I. Mandel, F. S. Broekgaarden. 2022. Rates of compact binary coalescences. *Living Reviews of Relativity* 25, 1. arXiv:2107.14239
42. Team COMPAS: J. Riley et al. 2022. Rapid stellar and binary population synthesis with COMPAS. *ApJ Supplements* 258, 34. arXiv:2109.10352
43. I. Mandel, R. J. E. Smith. 2021. GW200115: A non-spinning black hole – neutron star merger. *ApJ Letters* 922, L14. arXiv:2109.14759
44. R. Hirai, I. Mandel. 2021. Conditions for accretion disc formation and observability of wind-accreting X-ray binaries. *PASA* 38, e056. arXiv:2108.03774
45. S. Galaudage, C. Talbot, T. Nagar, D. Jain, E. Thrane, I. Mandel. 2021. Building better spin models for merging binary black holes: Evidence for non-spinning and rapidly spinning nearly aligned sub-populations. *ApJ Letters* 921, L15. arXiv:2109.02424
46. R. Willcox, I. Mandel, E. Thrane, A. Deller, S. Stevenson, A. Vigna-Gómez. 2021. Constraints on Weak Supernova Kicks from Observed Pulsar Velocities. *ApJ Letters* 930, L37. arXiv:2107.04251
47. F. S. Broekgaarden, E. Berger, C. J. Neijssel, A. Vigna-Gómez, D. Chattopadhyay, S. Stevenson, M. Chruslinska, S. Justham, S. E. de Mink, I. Mandel. 2021. The Impact of Massive Binary Star and Cosmic Evolution on Gravitational Wave Observations I: Black Hole - Neutron Star Mergers. *MNRAS* 508, 502. arXiv:2103.02608
48. G. P. Lamb, D. A. Kann, J. J. Fernandez, I. Mandel, A. J. Levan, N. R. Tanvir. 2021. GRB jet structure and the jet break. *MNRAS* 506, 4163. arXiv:2104.11099
49. R. Smith, S. Borhanian, B. Sathyaprakash, F. Hernandez Vivanco, S. Field, P. Lasky, I. Mandel, S. Morisaki, D. Ottaway, B. Slagmolen, E. Thrane, D. Töyrä, S. Vitale. 2021. Bayesian inference for gravitational waves from binary neutron star mergers in third-generation observatories. *Phys. Rev. Letters* 127, 081102. arXiv:2103.12274
50. E. Grishin, A. Bobrick, R. Hirai, I. Mandel, H. Perets. 2021. Supernova explosions in active galactic nuclei discs. *MNRAS* 507, 156. arXiv:2105.09953
51. L. Lin, D. Bingham, F. Broekgaarden, I. Mandel. 2021. Uncertainty quantification of a computer model for binary black hole formation. *Annals of Applied Statistics* 15, 1604. arXiv:2106.01552
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183. D. A. Brown, J. Brink, H. Fang, J. R. Gair, C. Li, G. Lovelace, I. Mandel, K. S. Thorne. 2007. Gravitational Waves from Intermediate-Mass-Ratio Inspirals for Ground-based Detectors. *Phys. Rev. Lett.* 99, 201102. arXiv:gr-qc/0612060
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Publications with the LIGO Scientific Collaboration (LSC) [member 2005–2016]:

186. Abbott, B. et al. 2016. GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence. *Phys. Rev. Letters* 116, 241103. arXiv:1606.04855
187. Abbott, B. et al. 2016. Binary Black Hole Mergers in the first Advanced LIGO Observing Run. *Phys. Rev. X* 6, 041015. arXiv:1606.04856

188. Abbott, B. et al. 2016. Observation of Gravitational Waves from a Binary Black Hole Merger. *Phys. Rev. Letters* 116, 061102. arXiv:1602.03837
189. Abbott, B. et al. 2016. Astrophysical Implications of the Binary Black-hole Merger GW150914. *ApJL* 818, L22. arXiv:1602.03846
190. Abbott, B. et al. 2016. Tests of general relativity with GW150914. *Phys. Rev. Letters* 116, 221101. arXiv:1602.03841
191. Abbott, B. et al. 2016. (*as internal reviewer*) GW150914: Implications for the stochastic gravitational wave background from binary black holes. *Phys. Rev. Letters* 116, 131102. arXiv:1602.03847
192. Abbott, B. et al. 2016. GW150914: The Advanced LIGO Detectors in the Era of First Discoveries. *Phys. Rev. Letters* 116, 131103. arXiv:1602.03838
193. Abbott, B. et al. 2016. Properties of the binary black hole merger GW150914. *Phys. Rev. Letters*, 116, 241102. arXiv:1602.03840
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196. Abbott, B. et al. 2016. Localization and broadband follow-up of the gravitational-wave transient GW150914. *ApJL* 825, L13. arXiv:1602.08492
197. Abbott, B. et al. 2016. Observing gravitational-wave transient GW150914 with minimal assumptions. *Phys. Rev. D* 93, 122004. arXiv:1602.03843
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200. Abbott, B. et al. 2016. Characterization of transient noise in Advanced LIGO relevant to gravitational wave signal GW150914. *CQG* 33, 134001. arXiv:1602.03844
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203. Aasi, J. et al. 2015. Characterization of the LIGO detectors during their sixth science run. *Class. Quantum Grav.* 32, 105012.
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205. Aasi, J. et al. 2015. Searching for stochastic gravitational waves using data from the two colocated LIGO Hanford detectors. *Physical Review Letters* 91, 022003.
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RECENTLY
SUBMITTED
PUBLICATIONS,
CONFERENCE
PROCEEDINGS

1. I. Mandel, R. Hirai, L. Picker. Common envelopes at StanFest. arXiv:2412.10691
2. S. Gilbaum, E. Grishin, N. Stone, I. Mandel. How to Escape from a Trap: Outcomes of Repeated Black Hole Mergers in AGN. arXiv:2410.19904
3. J. Bodensteiner et al. 2024. Binarity at Low Metallicity (BLOeM): Multiplicity properties of Oe and Be stars.
4. M. Shikauchi, R. Hirai, I. Mandel. 2024. Evolution of the Convective Core Mass during the Main Sequence. arXiv:2409.00460
5. Z. Xing et al. 2024. Formation of Wind-Fed Black Hole High-mass X-ray Binaries: The Role of Roche-lobe-Overflow Post Black-Hole Formation. arXiv:2407.00200
6. R. Valli, L. Graziani and the LISA Synthetic UCB Catalogue Group. 2023. BinCodex: a common output format for binary population synthesis. arXiv:2311.03431
7. LISA Consortium Waveform Working Group: Afshordi, N. et al. 2023. Waveform Modelling for the Laser Interferometer Space Antenna. arXiv:2311.01300
8. V. Kalogera et al. 2021. The Next Generation Global Gravitational Wave Observatory: The Science Book. arXiv:2111.06990
9. I. Mandel. 2021. An accurate analytical fit to the gravitational-wave inspiral duration for eccentric binaries. *RNAAS* 5, 223. arXiv:2110.09254
10. L. Urias, T. J. Maccarone, V. Antoniou, I. Mandel, S. Vinciguerra. 2021. Candidate Type II Be X-Ray Binary Outbursts in NGC 6744. *Res. Notes AAS* 5, 209.
11. A. Casey, I. Mandel, P. Ray. 2021. The impact of the COVID-19 pandemic on academic productivity. arXiv:2109.06591
12. S. L. Schröder, M. MacLeod, E. Ramirez-Ruiz, I. Mandel, T. Fragos, A. Loeb, R. W. Everson. 2021. The Evolution of Binaries under the Influence of Radiation-Driven Winds from a Stellar Companion. arXiv:2107.09675
13. "I 'heart' Pluto" – we 'heart' it, mostly" (book review). I. Mandel. 2020. *Crystallography Reviews*
14. M. Bailes et al. 2019. Ground-Based Gravitational-Wave Astronomy in Australia: 2019 White Paper. arXiv:1912.06305
15. D. Liptai, D. J. Price, I. Mandel, G. Lodato. 2019. Disc formation from tidal disruption of stars on eccentric orbits by Kerr black holes using GRSPH. arXiv:1910.10154
16. P. F. Michelson, R. L. Byer, S. Buchman, I. Mandel, J. Lipa, S. Saraf. 2019. MFB: A Mid-Frequency-Band Space Gravitational Wave Observer for the 2020 Decade (Decadal Instrument White Paper). arXiv:1908.02861

17. V. Kalogera, C. P. L. Berry, M. Colpi, S. Fairhurst, S. Justham, I. Mandel, A. Mangiagli, M. Mapelli, C. Mills, B. S. Sathyaprakash, R. Schneider, T. Tauris, R. Valiante. 2019. Deeper, Wider, Sharper: Next-Generation Ground-Based Gravitational-Wave Observations of Binary Black Holes (Decadal White Paper). arXiv:1903.09220
18. J. W. Barrett, I. Mandel, C. J. Neijssel, S. Stevenson, A. Vigna-Gómez. 2017. Exploring the Parameter Space of Compact Binary Population Synthesis. IAU Symposium 325, 46. arXiv:1704.03781
19. I. Mandel. 2017. The astrophysics of LIGO gravitational-wave observations, in *11th INTEGRAL conference proceedings*, edited by Ed van den Heuvel, <https://pos.sissa.it/285/002>
20. C. P. L. Berry et al. 2016. Early Advanced LIGO binary neutron-star sky localization and parameter estimation. Journal of Physics: Conference Series; 76(1):012031(4). arXiv:1606.01095
21. W. M. Farr, I. Mandel, C. Aldridge, K. Stroud. 2015. The Occurrence of Earth-Like Planets Around Other Stars. arXiv:1412.4849
22. M. Hendry et al. 2014. Education and public outreach on gravitational-wave astronomy. General Relativity and Gravitation, 46:1764.
23. R. M. Shannon et al. 2014. Summary of session C1: pulsar timing arrays. General Relativity and Gravitation, 46:1765.
24. M. Branchesi et al. 2014. C7 multi-messenger astronomy of GW sources. General Relativity and Gravitation, 46:1771.
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27. I. Mandel, L. Z. Kelley, E. Ramirez-Ruiz. 2011. Towards improving the prospects for coordinated gravitational-wave and electromagnetic observations. arXiv:1111.0005
28. I. Mandel, R. O’Shaughnessy, V. Kalogera. 2010. Unravelling Binary Evolution from Gravitational-Wave Signals and Source Statistics. arXiv:1001.2583
29. I. Mandel, J. R. Gair, M. C. Miller. 2010. Detecting coalescences of intermediate-mass black holes in globular clusters with the Einstein Telescope. arXiv:0912.4925
30. J. R. Gair, I. Mandel, L. Wen. 2008. Time-Frequency Analysis of Extreme-Mass-Ratio Inspiral Signals in Mock LISA Data. J. Phys.: Conf. Ser. 122 012037. arXiv:0710.5250
31. I. Mandel. 2007. Spin Distribution Following Minor Mergers and the Effect of Spin on the Detection Range for Low-Mass-Ratio Inspirals. arXiv:0707.0711
32. A. Silbergleit, I. Nemenman, I. Mandel. 2003. On the Interaction of Point Charges in an Arbitrary Domain. J. Tech. Phys. 48 (2), 146-151. arXiv:physics/0105052

SELECTED
PRESENTATIONS

- 9/2006 Talk at LISA Astro-GR@AEI, Golm, Germany. “Using EMRIs to probe bumpy black-hole spacetimes”
- 1/2007 Seminar at Leyden, Netherlands. “Gravitational waves from intermediate-mass-ratio inspirals in ground-based detectors”
- 4/2007 Talk at APS, Jacksonville, FL. “Intermediate-mass-ratio inspirals into intermediate-mass black holes”
- 7/2007 Talk at Amaldi 7, Sydney, Australia. “Time-Frequency Analysis of Extreme-Mass-Ratio Inspirational Signals: Mock LISA Data Challenge, Round 2”
- 10/2007 Astrophysics Seminar at Northwestern University, Evanston, IL. “Testing the No-Hair Theorem with Gravitational-Wave Observations”
- 11/2007 Talk at 17th Midwest Relativity Meeting, St Louis, MO. “Black-Hole Spins Following Minor Mergers”
- 12/2007 Talk at GWDAW-12, Boston, MA. “Extracting Extreme Mass Ratio Inspirational Parameters via Time-Frequency Methods”
- 2/2008 Seminar at Center for Gravitation and Cosmology, University of Wisconsin-Milwaukee. “Ground-based detection of gravitational waves from intermediate-mass-ratio inspirals”
- 3/2008 Talk at 24th Pacific-Coast Gravity Meeting, Santa Barbara, CA. “Extracting Extreme Mass Ratio Inspirational Parameters via Time-Frequency Methods”
- 6/2008 Talk at 7th LISA Symposium, Barcelona, Spain. “Can we detect IMRIs?”
- 9/2008 Short seminar at Institute of Astronomy, Cambridge, UK. “Ground-based detection of gravitational waves from intermediate-mass-ratio inspirals”
- 10/2008 Talk at 18th Midwest Relativity Meeting, Notre Dame, IN. “Can we detect intermediate-mass-ratio inspirals?”
- 12/2008 Seminar at HEP/Astrophysics Seminar, Purdue, West Lafayette, IN. “Prospects in Gravitational-Wave Astronomy”
- 2/2009 Seminar Southampton, UK “Compact binaries as sources for ground-based gravitational-wave detectors”
- 3/2009 Seminar KITP, UC Santa Barbara “Compact Binaries, Intermediate-Mass-Ratio Inspirals, and Other Prospects in Gravitational-Wave Astronomy”
- 4/2009 Talk at IMBH Workshop, UC Irvine. “Gravitational Waves from Binary Systems Containing Intermediate-Mass Black Holes”
- 6/2009 Talk at Amaldi-8 conference, Columbia University. “Compact binaries as sources for ground-based gravitational-wave detectors”
- 7/2009 Invited Talk at NRDA-2 at AEI, Golm, Germany. “Predictions for Detectable Coalescences of Compact Binaries Including Black Holes”
- 7/2009 Talk at Marcel Grossmann 12 in Paris, France. “Probing Light Seeds of Massive Black Holes”

with Gravitational Waves”

7/2009 Invited talk at MG-12, Paris. “Unravelling Binary Evolution from Gravitational-Wave Signals and Source Statistics”

10/2009 Invited talk at the CfA, Cambridge, MA. “Gravitational Waves from Binaries”

1/2010 Talk at NSF Fellows’ Symposium, AAS, Washington, DC. “Prospects in Gravitational-Wave Astronomy”

1/2010 Poster at GWDAA, Rome. “Parameter estimation on gravitational waves from multiple coalescing binaries”

2/2010 Talk at Aspen Winter School on Formation and Evolution of Black Holes, Aspen, CO. “Extracting the distribution of black-hole parameters from gravitational-wave observations”

3/2010 Seminar, University of California, Santa Cruz. “Prospects in Gravitational-Wave Astronomy”

5/2010 Seminar, Northwestern University. “Prospects in Gravitational-Wave Astronomy”

5/2010 Seminar, Rochester Institute of Technology. “Prospects in Gravitational-Wave Astronomy”

6/2010 Talk at NRDA at the Perimeter Institute, Waterloo, Canada. “Bayesian Inference on Numerical Injections”

6/2010 Poster at LISA Symposium, Stanford, CA. “Extracting the distribution of black-hole parameters from gravitational-wave observations”

7/2010 Invited talk at GR-19, Mexico City. “The Mock LISA Data Challenges”

7/2010 Seminar, University of Birmingham, UK. “GWastrophysics”

7/2010 Talk, COSPAR-2010, Bremen. “Testing General Relativity with Gravitational Waves from Extreme Mass Ratio Inspirals”

1/2011 Talk at NSF Fellows Symposium, Seattle. “Gravitational waves from compact binaries: Status and prospects”

1/2011 Talk at AAS, Seattle. “Searching For Gravitational-wave Signals From Compact Binaries With LIGO And Virgo”

1/2011 Talk at GWPAA, Milwaukee, WI. “The Distribution of Coalescing Compact Binaries in the Local Universe: Prospects for Gravitational-Wave Observations”

2/2011 Seminar, West Virginia University, Morgantown, WV. “Markov Chain Monte Carlo techniques for parameter estimation”

2/2011 Seminar, University of Florida, Gainesville, FL. “GWastrophysics with compact binaries”

3/2011 Talk at Evolution of Compact Binaries, Valparaiso, Chile. “Compact Binary Coalescences: Connections to Gravitational-Wave Astronomy”

4/2011 Talk at MKI Postdoc Symposium, MIT. “Gravitational-wave Astrophysics with Compact

Binaries”

5/2011 Seminar at Princeton University. “GWastrophysics”

5/2011 Seminar at University of Maryland, College Park. “GW astrophysics with compact binaries”

5/2011 Talk at Aspen Center for Physics. “Why compact binaries are not boring”

9/2011 Poster at New Horizons in Time Domain Astronomy, Oxford, UK. “Electromagnetic transients as triggers in searches for gravitational waves from compact binary inspirals”

10/2011 Invited talk at LOFT Science Meeting, Amsterdam. “Gravitational wave observatories and LOFT”

11/2011 Seminar at Warsaw University, Poland. “Gravitational-wave Astrophysics of Compact Binaries”

12/2011 Seminar at Cardiff University. “GWastrophysics of Compact Binaries”

12/2011 Invited talk at LOFT and the Variable X-ray Sky, RAS, London. “LOFT and the EM counterparts to gravitational wave sources”

12/2011 Talk at Gravitation, Astrophysics and Cosmology conference, Quy Nhon, Vietnam. “Astrophysics, Cosmology and Fundamental Physics with ground-based gravitational-wave detectors”

3/2012 Invited talk at April APS Meeting, Atlanta, GA. “Intermediate-mass black holes: A theoretical perspective”

4/2012 Talk at April APS Meeting, Atlanta, GA. “What Waveforms do Data Analysts Want?, or the dangers of systematic errors in parameter estimation”

5/2012 Invited talk at Sackler conference: testing GR with astrophysical systems, Cambridge, MA. “Testing GR with Binary Coalescence Events”

6/2012 Talk at GWPAW, Hannover. “What Waveforms do Data Analysts Want?, or the dangers of systematic errors in parameter estimation”

6/2012 Invited talk at Exploring New Horizons with Gravitational Waves, Hannover. “Astrophysical Sources and Parameter Estimation”

7/2012 Invited course at Nijmegen Astroparticle summer school. “Gravitational Wave Astrophysics”

9/2012 Led discussion on parameter estimation for advanced detectors at KITP workshop, Santa Barbara

10/2012 Seminar at University of Nottingham. “GWastrophysics of Compact Binaries”

10/2012 Invited talk at Russian Young Scientists Conference on Physics and Astronomy, Saint Petersburg (in Russian)

12/2012 Talk at Einstein Telescope Meeting, Hannover. “Challenges for source parameter estimation with the Einstein Telescope”

1/2013 Invited lectures on gravitational-wave astrophysics and parameter estimation at the Chris

Engelbrecht Gravitational-Wave Summer School, South Africa

2/2013 Seminars at Cambridge University and University of Warwick. “GWastrophysics of Compact Binaries”

2/2013 Invited overview talk at UK-India LIGO meeting. “Science Exploitation of advanced GW detectors: a provocation”

3/2013 Invited LIGO Academic Advisory Council lecture on “Astrophysics of binary black holes”

4/2013 Seminar at Hebrew University of Jerusalem. “GWastrophysics with Compact Binaries”

6/2013 Seminars at Guelph University and Perimeter Institute. “Exploring (astro)physics with gravitational waves”

6/2013 Invited talk at First UK LOFT Science meeting, London. “Gravitational Waves and LOFT”

7/2013 Invited lecture on LIGO and compact-binary astrophysics, Cracow School of Theoretical Physics, Zakopane, Poland

7/2013 Talk at GR-20, Warsaw. “BiG Waves: a different kind of gravitational-wave summer school”

8/2013 Invited lectures on gravitational-wave astrophysics at Beijing Normal University gravitational-wave summer school

9/2013 Talk at Numerical Relativity and Data Analysis workshop, Mallorca. “Waveform accuracy requirements for parameter estimation”

10/2013 Seminar at Imperial College, London. “LIGO and GWastrophysics of compact binaries”

12/2013 Talk at Gravitational-Wave Physics and Astronomy Workshop (GWPAW), Pune, India. “Parameter estimation, Fisher matrices, and abruptly terminating waveforms”. Invited panelist for discussion of multi-messenger astronomy

1,2/2014 Seminars at University of Kwa-Zulu Natal, University of Western Cape, and Stellenbosch University, South Africa, as part of a long-term National Institute of Theoretical Physics fellowship

3/2014 Seminars at Newcastle University, Florida Atlantic University

3/2014 Talk at “Stellar Tango in the Rockies” workshop, Lake Louise, Canada. “What can gravitational waves teach us about compact binary evolution?”

7/2014 Solicited talk at University of Washington INT workshop on “Binary Neutron Star Coalescence as a Fundamental Physics Laboratory”

8/2014 Seminar at University of California, San Diego. “Gravitational-wave astrophysics of compact binaries”

10/2014 Seminar at University of Southampton. “Adventures in Astrostatistics”

10/2014 Seminar (“Adventures in Astrostatistics”) and Tutorial (“All you wanted to know about Gravitational Wave Astrophysics and were afraid to ask”) at University of Amsterdam.

2/2015 Astronomy seminars at Melbourne and Monash Universities

4/2015 Physics colloquium at Monash University; astronomy seminar at Swinburne University: “Beautiful Binaries”

5/2015 Invited talk at Cardiff Black Hole Workshop: “Black-hole mass measurements”

6/2015 Invited talk at “GRG: A centennial perspective”, Penn State: “Overview of compact-binary merger rate predictions”

7/2015 Invited talks at Marcel Grossmann 14, Rome: “Intermediate-mass black holes: A theoretical perspective” and “Prospects for BNS Observations with Advanced GW Detectors”

7/2015 Talk at Alpine Cosmology Workshop: “Cosmology with gravitational waves”

11/2015 Invited talk, Jerusalem Tidal Disruption Workshop

2/2016 Invited talk, Aspen conference on Dynamics and accretion at the Galactic Center: “Tidal Disruptions of Binary Stars”

2/2016 Physics department colloquium, University of Florida; Astronomy seminar, Durham University: “Gravitational-wave astrophysics: the future is now”

3/2016 Invited talk at Workshop on Sampling in higher dimensions, Edinburgh: “Enhancing sampling efficiency: Inference on binary black holes with gravitational waves”

5/2016 Invited talk at The First Observations of a Binary Black Hole Merger, Hannover: “GW150914: Astrophysical implications of the discovery”

7/2016 Talk, Binary Stars in Cambridge, Cambridge, UK: “Massive Binary Paleontology with Gravitational Waves”

8/2016 Talk, GRavitational-wave Astronomy Meeting in Paris (GRAMPA): “Gravitational-wave Palaeontology”

9/2016 Colloquia, Leiden University and Center for Astrophysics, Harvard University: “Gravitational-wave astrophysics: The future is now” <https://www.youtube.com/watch?v=xXH-NBdhzk0>

10/2016 Invited talk at INTEGRAL conference, Amsterdam: “The astrophysics of LIGO gravitational-wave observations”

10/2016 Invited talk at Gravitational Waves & Cosmology meeting, DESY, Hamburg: “Astrophysical consequences of the LIGO discovery”

10/2016 Invited lectures at Marie Curie GraWIToN school, Rome

11/2016 Colloquium at the Geneva Observatory; Informal seminar at the Copernicus Center, Warsaw

12/2016 Colloquium at University of Nottingham

1/2017 Colloquium at Cardiff University

2/2017 Invited conference summary lecture, Aspen Center for Physics winter conference on “The Dawning Era of Gravitational-Wave Astrophysics”

2/2017 Colloquium at Lund University, Sweden

5/2017 Colloquium at Albert Einstein Institute (Max Planck Institute), Golm bei Potsdam

6/2017 Colloquium at University of Manchester

9/2017 Workshop summary talk at Lorentz Center, Leiden: “And then there was light: electromagnetic counterparts of binary black hole mergers”

9/2017 Invited talk at “Piercing the Sphere of Influence” conference, Cambridge: “Stellar binaries: tidal separations, mergers, and disruptions”

9/2017 Plenary talk at DESY theory workshop “Fundamental physics in the cosmos”, Hamburg: “Astrophysical sources of GWs and future prospects for their detection”

10/2017 Seminar at Oxford University

11/2017 Invited discussion lead at Center for Computational Astrophysics (New York) special workshop on binary neutron stars

12/2017 Seminar at Keele University

2/2018 Seminars at University of California, Berkeley, and University of California, Santa Cruz, “The future of gravitational-wave astronomy”

4/2018 Seminar at St Petersburg Academic University (in Russian)

4/2018 Invited talk at “UQ for inverse problems in complex systems”, Isaac Newton Institute, Cambridge: “Studying black holes with gravitational waves: Why GW astronomy needs you!”

5/2018 Invited talk at Sackler conference on Gravitational-wave Astrophysics: “Formation of merging black holes through isolated binary evolution via the common envelope phase” <https://www.youtube.com/watch?v=QhPd1WvWnIO>

7/2018 Les Houches lecture series on astrophysical sources of gravitational waves

8/2018 Plenary talk, IAU General Assembly in Vienna (X-ray binary session), “Gravitational-wave astrophysics”

8/2018 Lecture at STFC summer school, Belfast

9/2018 Invited presentation at ULX meeting, ISSI, Bern

10/2018 Invited presentation at third-generation gravitational-wave detector science case planning meeting, Golm

2/2019 Seminar at Melbourne University

7/2019 Talk at ASA meeting

8/2019 Invited presentation at International Statistical Institute World Congress (Kuala-Lumpur, Malaysia), “Adventures in astrostatistics: Black holes and beyond”

8/2019 Talk at Munich Institute for Astro- and Particle Physics program “Precision gravity: from the LHC to LISA”

10/2019 Seminar at University of Western Australia

1/2020 Invited talk at Max-Planck meeting at Schloss Ringberg, “The current astrophysical understanding of the progenitors of binary mergers seen by LIGO”

2/20 Talk at ANITA meeting, Canberra

5/20 Colloquium on “Gravitational-wave astronomy” at Macquarie University (Sydney, Australia, delivered via zoom)

9/20 Colloquium on “Gravitational-wave astronomy” at TIFR (Mumbai, India, delivered via zoom)

1/2021 Colloquium on “The promise of gravitational-wave astrophysics” at UCLA (delivered via zoom)

5/2021 Colloquium at the National Institute of Theoretical Physics, South Africa (delivered via zoom)

6/2021 Colloquium on “Some recent results in massive binary evolution” at the Hebrew University of Jerusalem (delivered via zoom)

6/2021 Invited talk on “Stochastic recipes for compact remnant masses, and natal kicks and their impact on gravitational wave sources”, Gravitational Wave Astrophysics Conference, Hefei, China (delivered via zoom)

6/2021 Talk on “Cygnus X-1 as a probe of massive stellar and binary evolution” at the European Astronomical Society meeting (delivered via zoom)

6/2021 Talk on “Black hole masses (of stellar-mass BHs)” at Aspen Center for Physics (delivered via zoom)

7/2021 Opening plenary talk, Amaldi 14 “Accelerating gravitational wave science”, Melbourne, Australia

9/2021 Colloquium at the Kavli Institute for Astronomy and Astrophysics (KIAA), Peking University (delivered via zoom)

10/2021 Astrophysics seminar at the National Centre for Nuclear Research, Warsaw, Poland (via zoom)

11/2021 International Astrostatistics Association and the Astrominformatics & Astrostatistics Commission of the International Astronomical Union invited seminar (delivered via zoom)

12/2021 LSST Australia workshop, talk on “Exploring common envelopes with LSST observations of luminous red novae”

1/2022 Lectures at the Saas Fee gravitational waves astrophysics school, Switzerland

3/2022 Colloquium at the University of Melbourne, “Accretion and drag in stellar binaries”

7/2022 Discussion lead, Aspen Center for Physics

9/2022 Colloquium at the University of Queensland

11/2022 Australian National University Colloquium

12/2022 Invited talk at “Supernovae in the Gravitational Wave Detection Era”, Melbourne, on “Supernovae and compact-object binaries”

2/2023 ANITA workshop talk, “The expanding toolkit of a theoretical astrophysicist”

2/2023 Phantom workshop invited talk, “A theorist’s challenges for smooth particle hydrodynamics simulations”

3/2023 Colloquium at the California Institute of Technology

5/2023 OzFink workshop invited talk, “Binaries and the Vera Rubin Observatory”

7/2023 ASA talk, “Common envelopes in massive stars”

9/2023 Astro3D colloquium, “Black holes in Binaries”

11/2023 Seminar at the Max Planck Institute for Astrophysics, Garching (Munich)

11/2023 Colloquium at University of Milano Bicocca

11/2023 Colloquium at KU Leuven, Belgium

12/2023 RAS special meeting invited talk “Astrophysics with black-hole binaries”, London

1/2024 Heidelberg Joint Astronomical Colloquium, “Black holes in binaries” (Germany)

2/2024 Talk at Transients Down Under conference “Short gamma ray bursts, the neutron star mass distribution, and the equation of state”, Melbourne

2/2024 Talk at ANITA workshop, “Improved models for mass transfer in binaries”

2/2024 Colloquium (virtual) at Bar Ilan University, Israel

6/2024 “Future of Astrophysics in Australia”, ASA hub invited talk, Melbourne

7/2024 Talk on “Common envelopes, their outflows, and their lightcurves”, StanFest, Leuven, Belgium

7/2024 Invited talk “Theoretical expectations for high-mass X-ray binaries, SN remnants, and their evolutionary paths”, Liege International Astronomical Colloquium: The eventful life of massive stellar multiples

10/2024 Invited panelist at Australian Research Council Future Fellows induction

12/2024 Presentation on COMPAS at OzGrav ARC Centre of Excellence retreat

SELECTED
OUTREACH
ACTIVITIES

- 11/2008 LIGO Scientific Collaboration booth at the Society of Physics Students congress at Fermilab
- 12/2008 Co-presented *The Wonders of the Night Sky: The Life and Death of Stars* at the Theodore Roosevelt Elementary School's science fair in Park Ridge, Illinois
- 4/2009 Special event at Dearborn Observatory as part of the *100 Years of Astronomy* celebration of the International Year of Astronomy
- 5/2009 Science Club at Roosevelt elementary school
- 5/2009 Judging Meaningful Science Consortium *Project Showcase* for Chicago public high school students
- 7/2009 LIGO traveling exhibit at Adler Planetarium.
- 12/2009 Co-presented *The Wonders of the Night Sky: The Life and Death of Stars* at the Theodore Roosevelt Elementary School's science fair in Park Ridge, Illinois
- 3/2010 Co-organized the presentation of *Einstein's Cosmic Messengers*, a multimedia concert by Andrea Centazzo and Michele Vallisneri, at Northwestern University.
- 2/2011 Taught elementary school children at Anova school in Melrose, MA.
- 3/2012 Gravitational-wave presentation at the Big Bang Fair, Birmingham National Exhibition Center
- 2012–2016 Founder and lead organizer of the Birmingham Gravitational-wave summer school (BiG Waves)
- 6/2012 Presented and led interactive sessions at Physics Experience Week for local high school students
- 6-8/2012 Supervised a summer student in creating animations of gravitational-wave sights and sounds for public demonstrations
- 10/2012 Popular physics lecture to Birmingham Humanist society
- 2012 Edited chapters for Birmingham e-book on gravitational waves, <http://www.gwoptics.org/ebook/>
- 3/2013 Popular article on “Black Holes in Advanced LIGO: The observational payoff” (with Ben Farr), <http://www.ligo.org/magazine/LIGO-magazine-issue-2.pdf>
- 3/2014 National Science and Engineering Competition judge
- 3/2014 Source for March 2014 cover page National Geographic article on black holes, see <http://ngm.nationalgeographic.com/2014/03/black-holes/finkel-text>
- 9/2014 British Science Festival gravitational-wave hands-on exhibit
- 11/2014 National Science and Engineering Competition online judge
- 10/2012 — now Member of University of Birmingham HiSPARC team <http://www.hisparc.nl/en/>; advisor on data analysis strategies

3/2015 Popular article on “Where should I apply for grad school?”, LIGO magazine,
<http://www.ligo.org/magazine/LIGO-magazine-issue-6.pdf#page=24>

5/2015 Public talk for Walsall Astronomical Society

1/2016 Public talk for the Association for Science Education annual conference (describing current research to school science teachers)

1/2016 School talk at Malvern College

1/2016 School talk at University of Birmingham School

1/2016 Institute of Physics public lecture

1/2016 Public talk as part of the “Astronomy in the City” series

2/2016 Source for Nature magazine news article,
<http://www.nature.com/news/einstein-s-gravitational-waves-found-at-last-1.19361>

2/2016 Interviewed by Aspen public radio

3/2016 Public talk for Liberal Arts and Sciences

5/2016 “Pint of Science: Night with the stars” public talk

6/2016 Source for National Geographic news article,
<http://news.nationalgeographic.com/2016/06/gravitational-waves-stars-ripples-space-time-origins-astronomy>

7/2016 Aspen public physics lecture: “Singing Binaries: Listening to the Chirps of Black Holes”,
<http://mc.grassrootstv.org/CablecastPublicSite/show/14164?channel=1>

7/2016 Source for news article
<http://www.birmingham.ac.uk/university/colleges/eps/news/college/2016/7/Merging-binary-black.aspx>

9/2016 In the press for proposing the chemically homogeneous evolution channel with Selma de Mink
<https://www.quantamagazine.org/colliding-black-holes-tell-new-story-of-stars-20160906/>

12/2016 Talk at Wolverhampton Astronomical Society

1/2017 Talk for school children at Year 9 Big Quiz

3/2017 Invited talk at physics teachers conference, Santa Barbara

4/2017 In the press for Nature Communications article on binary black hole formation: including The Register, Physics World
<http://physicsworld.com/cws/article/news/2017/apr/20/computer-model-helps-explain-how-ligo-s>

7/2017 Talk at King Edward’s VI Camp Hill School

7/2017 Talk for school children at university residential summer school

7/2017 Lecture at the Worshipful Company of Scientific Instrument Makers, London

8/2017 Authored article “Gravitational waves are helping us crack the mystery of how pairs of black holes form” in The Conversation,
<https://theconversation.com/gravitational-waves-are-helping-us-crack-the-mystery-of-how-pairs-of-black-holes-form>

9/2017 School talk at University of Birmingham School

3/2018 Radio interview on BBC West Midlands

4/2018 Source for Nature News Feature, <https://www.nature.com/articles/d41586-018-04157-6>

7/2018 Source for article in The Independent, <https://www.independent.co.uk/life-style/blood-moon-lunar-eclipse-mood-astronomy-astrology-sun-earth-a8464681.html>
<https://www.birmingham.ac.uk/schools/physics/news/2018/birmingham-professor-counters-myths-sun.html>

4/2019 Source for Nature News Feature, <https://www.nature.com/articles/d41586-019-01064-2>

8/2019 School talk at LIDER Russian School, Melbourne

8/2019 Source for Quantum Magazine Article, <https://www.quantamagazine.org/to-make-two-black-holes-from-one>

2/2020 Lecture at Mornington Peninsula Astronomical Society: <https://www.youtube.com/watch?v=KY4JduZC4UQ>

2/2020 Co-author (with Leslie Atkins Elliot) of Cosmos Magazine article “Teaching Physics to Monks”

3/2020 Source for SpaceAustralia Article, http://spaceaustralia.com/news/modelling-evolution-double-black-holes-fbclid=IwAR1fnPhS5Wmsh8xe1y_c5QOGMBG23VgF_36U13CzC12of9Gk3FTk8hPj-Bg

4/2020 Source for phys.org article <https://phys.org/news/2020-03-unravelling-mystery-black-holes-science.html>

5/2020 Source for Herald Sun article

5/2020 Live public talk zoom talk “Singing binaries: listening to the chirps of black holes” https://www.youtube.com/watch?v=EbdSdWfr_jk

9/2020 Wrote article “Gravitational waves: astronomers spot a black hole so massive they weren’t sure it could exist” for The Conversation: <https://theconversation.com/gravitational-waves-astronomers-spot-a-black-hole-so-massive-they-werent-sure-it-could-exist>
(in top 5 most read Conversation articles of the month)

9/2020 Source for Nature article <https://www.nature.com/articles/d41586-020-02524-w>; see also <https://www.quantamagazine.org/possible-detection-of-a-black-hole-so-big-it-should-not-exist>

9/2020 Interview, South African radio

10/2020 Source for Science article <https://www.sciencemag.org/news/2020/10/famous-shadow-black-hole>

12/2020 Australian Institute of Physics Victoria Nobel Lecture

1/2021 Source for “The Ripple Effect” article in The Mercury

1/2021 Subject of “Using 100-million-year-old fossils and gravitational-wave science to predict Earth’s

future climate”, e.g., <https://phys.org/news/2021-01-million-year-old-fossils-gravitational-wave.html>

1/2021 Subject of “Past (more) perfect”, Cosmos magazine, <https://cosmosmagazine.com/history/palaeontology/past-more-perfect>

2/2021 Public lecture for the Astronomical Society of Victoria (over zoom)

2/2021 Co-wrote article “21 times the Sun’s mass: heaviest stellar black hole in the Milky Way is more massive than we thought” for The Conversation: [https://theconversation.com/21-times-the-suns-m](https://theconversation.com/21-times-the-suns-mass)

2/2021 Source for or mentioned in multiple other articles related to Cygnus X-1 observations, e.g., New York Times: <https://www.nytimes.com/2021/02/18/science/cygnus-black-hole-astronomy.html>

9/2021 Public lecture “New windows on the universe: The discovery of gravitational waves”: <https://www.youtube.com/watch?v=Zhr5bJlfp54>

1/2022 Keynote presentation for the National Youth Science Forum

1/2022 Article in “All about space” magazine

2/2022 Source for Nature article <https://www.nature.com/articles/d41586-022-00346-6>

2/2022 Astronomical Society of Australia Early Career Researcher workshop keynote presentation “How to apply for an academic job”

5/2022 Source for Daily Express article on Event Horizon Telescope imaging of Sgr A* [https://www.express.co.uk/news/science/1609298/black-hole-pictured-milky-way-event-horizon-telescope-sag](https://www.express.co.uk/news/science/1609298/black-hole-pictured-milky-way-event-horizon-telescope-sagittarius)

5/2022 Talk for students at Melbourne High School

8/2023 Talk for U3A (University of the Third Age)