

# Ilya Mandel

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## CONTACT INFORMATION

School of Physics and Astronomy, Monash University  
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*WWW:* <http://ilyamandel.github.io>

## 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 - present**

*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

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:*

Aspen Center for Physics board member (2016 – current)  
Gravitational-Wave International Committee 3G Science Case team member, Binaries working group co-chair (2017 – 2019)  
Organising Committee Member, IAU Binary and Multiple Star Systems Commission (2018 – present)  
Chair, steering committee of the Australian National Institute for Theoretical Astrophysics (ANITA; 2020 – current [deputy chair, 2019-2020])  
Councillor, Astronomical Society of Australia (2019 – current)  
Council member, International Astrostatistics Association (2021 – 2023)

### *Journal editing and review, grant review:*

Scientific Editor, Astrophysical Journal  
Editorial Board member, Nature Scientific Data  
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)  
Grant reviewer for NASA (USA), NSF (USA), Hungarian Scientific Research Fund, STFC (UK), NWO (Netherlands Organisation for Scientific Research), European Research Council, CONICYT (Chile), ARC (Australia), CRC (Canada) (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 Physics Center 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])  
International Society on General Relativity & Gravitation, Nominating Committee member (2016 – current)

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 organiser  
 ANITA 2021 workshop (virtual) lead organiser  
 SOC co-chair, EAS session “Where are the BH-NS binaries?” (2021)  
 SOC member, GWPAW 2021

*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 Torun 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

*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 – present), formation of binary black holes across cosmic history  
 Reinhold Willcox (2019 – present), neutron star kicks and dynamics  
 Jeff Riley (2019 – present), massive stellar binary population synthesis  
 Mike Lau (2019 – present), low-frequency gravitational-wave sources and common-envelope hydrodynamics modelling  
 Lucy McNeill (2019 – present, co-advised with B. Mueller), angular momentum transport in evolved stars  
 Tanner Wilson (2019 – present, co-advised with A. Casey), asteroseismology and differential rotation

*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  
 Hasini Janapriya and George King (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  
 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 (2020–2021), the impact of initial conditions on binary evolution  
Tushar Nagar (2021), gravitational-wave source catalog population inference

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)  
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,  $\sim 50$  students)  
General Physics [back-of-the-envelope physics] (third-year,  $\sim 150$  students)  
Group studies [research project] (third-year, 16 students)  
Observational Cosmology (third- and fourth-year,  $\sim 30$  students)  
Gravitational-wave Astrophysics (graduate seminar,  $\sim 10$  students)

GRANTS              2019–2024      Australian Research Council Future Fellowship (PI): *Shining gravitational waves on binary astrophysics* [AUD \$936k from ARC, AUD \$996k in matching Monash funds]  
2017–2020      NERC grant (Co-I): *Reducing Greenhouse Climate Proxy Uncertainty* [total value of grant £434k]  
2016–2019      STFC Consolidated grant (Co-I): *Searching for intermediate mass ratio coalescences in Advanced LIGO/Virgo data* [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 *Black holes in globular clusters* (PI) [£1200]  
2015              Kevin Westfold Distinguished Visitor to Monash University, Melbourne, Australia [\$12k support]  
2015              RAS Undergraduate Bursary *Studying black holes with gravitational waves* (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): *GraWIToN* [total value to Birmingham £481k]  
2013–2016      Leverhulme Trust Research Project Grant (PI): *Testing general relativity with ground-based gravitational-wave observations* [£162k]  
2013–2016      STFC Consolidated grant (Co-I): *Gravitational wave observations of compact binary systems* [total value of grant £1,876k]  
2013–2016      ASPERA grant (Co-I): *Networking and R&D for the Einstein Telescope* [salary and travel support, €59K]  
2009–2011      NSF Astronomy and Astrophysics Postdoctoral Fellowship grant (PI): *Gravitational-wave astronomy: a new window on the universe* [\$249k]  
2009–2002      NASA ATP grant (Co-I) *Binary White Dwarfs: Gravitational Wave Astrophysics and Data Analysis* [\$399k]

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

1. J. C. A. Miller-Jones, A. Bahramian, J. A. Orosz, I. Mandel, L. Gou, T. J. Maccarone, C. J. Neijssel et al. 2021. Cygnus X-1 contains a 21-solar mass black hole – implications for massive star winds. *Science*, published. arXiv:2102.09091
2. C. J. Neijssel, S. Vinciguerra, A. Vigna-Gomez, R. Hirai, J. C. A. Miller-Jones, A. Bahramian, T. J. Maccarone, I. Mandel. 2021. Wind mass-loss rates of stripped stars inferred from Cygnus X-1. *ApJ* 908, 118. arXiv:2102.09092
3. E. M. Rossi, N. C. Stone, J. A. P. Law-Smith, M. MacLeod, G. Lodato, J. L. Dai, I. Mandel. 2021. The Process of Stellar Tidal Disruption by Supermassive Black Holes. The first pericenter passage. *Space Science Reviews* 217, 40. arXiv:2005.12528
4. D. Psaltis, C. Talbot, E. Payne, I. Mandel. 2021. Probing the black hole metric. I. Black hole shadows and binary black-hole inspirals. *Phys Rev D*, accepted. arXiv:2012.02117
5. C. Wang, J. A. Bendle, H. Yang, Y. Yang, A. Hardman, A. Yamoah, A. Thorpe, I. Mandel, S. E. Greene, J. Huang. 2021. Global calibration of novel 3-hydroxy fatty acid based temperature and pH proxies. *Geochimica et Cosmochimica Acta*, accepted.
6. T. Dunkley Jones, Y. Eley, W. Thompson, S. Greene, I. Mandel, K. Edgar, J. Bendle. 2020. OPTiMAL: A new machine learning approach for GDGT-based palaeothermometry. *Climate of the Past* 16, 2599. <https://cp.copernicus.org/preprints/cp-2019-60/>
7. A. Miglio et al. 2020. Age dissection of the Milky Way discs: red giants in the Kepler field. *A&A*, accepted. arXiv:2004.14806
8. I. Mandel, B. Müller, J. Riley, S. E. de Mink, A. Vigna-Gomez, D. Chattopadhyay. 2020. Binary population synthesis with probabilistic remnant mass and kick prescriptions. *MNRAS* 500, 1380. arXiv:2007.03890
9. L. du Buisson, P. Marchant, P. Podsiadlowski, C. Kobayashi, F. B. Abdalla, P. Taylor, I. Mandel, S. E. de Mink, T. J. Moriya, N. Langer. 2020. Cosmic Rates of Black Hole Mergers and Pair-Instability Supernovae from Chemically Homogeneous Binary Evolution. *MNRAS*, 499, 5941. arXiv:2002.11630
10. I. Mandel and B. Müller. 2020. Simple recipes for compact remnant masses and natal kicks. *MNRAS* 499, 3214. arXiv:2006.08360
11. K. Ackley et al. 2020. Neutron Star Extreme Matter Observatory: A kilohertz-band gravitational-wave detector in the global network. *PASA*, accepted. arXiv:2007.03128
12. R. Hirai, T. Sato, P. Podsiadlowski, A. Vigna-Gomez, I. Mandel. 2020. Formation pathway for lonely stripped-envelope supernova progenitors: implications for Cassiopeia A. *MNRAS* 499, 1154. arXiv:2008.05076
13. A. Murguia-Berthier, A. Batta, A. Janiuk, E. Ramirez-Ruiz, I. Mandel, S. C. Noble, R. W. Everson. 2020. On the maximum stellar rotation to form a black hole without an accompanying luminous transient. *ApJ Letters* 901, L24. arXiv:2005.10212
14. M. Nicholl et al. 2020. An outflow powers the optical rise of the nearby, fast-evolving tidal disruption event AT2019qiz. *MNRAS* 499, 482. arXiv:2006.02454
15. K. Ackley et al. 2020. Observational constraints on the optical and near-infrared emission from the neutron star/black hole binary merger S190814bv. *Astronomy & Astrophysics* 643, A113. arXiv:2002.01950
16. A. Vigna-Gomez, M. MacLeod, C. J. Neijssel, F. S. Broekgaarden, S. Justham, G. Howitt, S. E. de Mink and I. Mandel. 2020. Common-Envelope Episodes that lead to Double Neutron Star formation. *PASA* 37, e038. arXiv:2001.09829
17. S. Vinciguerra, C. J. Neijssel, A. Vigna-Gómez, I. Mandel, P. Podsiadlowski, T. J. Maccarone, M. Nicholl, S. Kingdon, A. Perry, F. Salemi. 2020. Be X-ray binaries in the SMC as (I) indicators of mass transfer efficiency. *MNRAS* 498, 4705. arXiv:2003.00195

18. V. Korol, I. Mandel, M. C. Miller, R. P. Church, M. B. Davies. 2020. Merger rates in primordial black hole clusters without initial binaries. *MNRAS* 496, 994. arXiv:1911.03483
19. S. De, M. MacLeod, R. W. Everson, A. Antoni, I. Mandel, E. Ramirez-Ruiz. 2020. Common Envelope Wind Tunnel: The Effects of Binary Mass Ratio and Implications for the Accretion-Driven Growth of LIGO Binary Black Holes. *ApJ* 897, 130. arXiv:1910.13333
20. S. L. Schroeder, M. MacLeod, A. Loeb, A. Vigna-Gomez, I. Mandel. 2020. Explosions Driven by the Coalescence of a Compact Object with the Core of a Massive-Star Companion Inside a Common Envelope: Circumstellar Properties, Light Curves, and Population Statistics. *ApJ* 892, 13. arXiv:1906.04189
21. I. Mandel, T. Fragos. 2020. An alternative interpretation of GW190412 as a binary black hole merger with a rapidly spinning secondary. *ApJ Letters* 895, L28. arXiv:2004.09288
22. S. S. Bavera, T. Fragos, Y. Qin, E. Zapartas, C. J. Neijssel, I. Mandel, A. Batta, S. M. Gaebel, C. Kimball, S. Stevenson. 2020. The origin of spin in binary black holes: Predicting the distributions of the main observables of Advanced LIGO. *Astronomy & Astrophysics* 635, A97. arXiv:1906.12257
23. M. Y. M. Lau, I. Mandel, A. Vigna-Gómez, C. J. Neijssel, S. Stevenson, A. Sesana. 2020. Detecting Double Neutron Stars with LISA. *MNRAS* 492, 3061. arXiv:1910.12422
24. G. Howitt, S. Stevenson, A. Vigna-Gomez, S. Justham, N. Ivanova, T. E. Woods, C. J. Neijssel, I. Mandel. 2020. Luminous Red Novae: population models and future prospects. *MNRAS* 492, 3229. arXiv:1912.07771
25. P. Marchant, K. Breivik, C. P. L. Berry, I. Mandel, S. L. Larson. 2020. Eclipses of continuous gravitational waves as a probe of stellar structure. *Physical Review D* 101, 024039. arXiv:1912.04268
26. L. Wyrzykowski, I. Mandel. 2020. Constraining the masses of microlensing black holes and the mass gap with Gaia DR2. *Astronomy & Astrophysics* 636, A20. arXiv:1904.07789
27. O. R. McBrien et al. 2019. SN2018kzr: a rapidly declining transient from the destruction of a white dwarf. *ApJ Letters* 885, L23. arXiv:1909.04545
28. G. Leloudas et al. 2019. The spectral evolution of AT 2018dyb and the presence of metal lines in tidal disruption events. *ApJ* 887, 218. arXiv:1903.03120
29. C. J. Neijssel, A. Vigna-Gomez, S. Stevenson, J. W. Barrett, S. M. Gaebel, F. Broekgaarden, S. E. de Mink, D. Szecsi, S. Vinciguerra, I. Mandel. 2019. The effect of the metallicity-specific star formation history on double compact object mergers. *MNRAS* 490, 3740. arXiv:1906.08136
30. F. S. Broekgaarden, S. Justham, S. E. de Mink, J. Gair, I. Mandel, S. Stevenson, J. W. Barrett, A. Vigna-Gomez, C. J. Neijssel. 2019. STROOPWAFEL: Simulating rare outcomes from astrophysical populations, with application to gravitational-wave sources. *MNRAS* 490, 5228. arXiv:1905.00910
31. R. X. Adhikari, P. Ajith, Y. Chen, J. A. Clark, V. Dergachev, N. V. Fotopoulos, S. E. Gossan, I. Mandel, M. Okounkova, V. Raymond, J. S. Read. 2019. Astrophysical science metrics for next-generation gravitational-wave detectors. *CQG* 36, 245010. arXiv:1905.02842
32. J. J. Andrews, I. Mandel. 2019. Double Neutron Star Populations and Formation Channels. 2019. *ApJ Letters* 880, L8. arXiv:1904.12745
33. J. Powell, S. Stevenson, I. Mandel, P. Tino. 2019. Unmodelled Clustering Methods for Gravitational Wave Populations of Compact Binary Mergers. *MNRAS* 488, 3810. arXiv:1905.04825
34. S. Stevenson, M. Sampson, J. Powell, A. Vigna-Gómez, C. J. Neijssel, D. Szécsi, I. Mandel. 2019. The impact of pair-instability mass loss on the binary black hole mass distribution. *ApJ* 882, 121. arXiv:1904.02821

35. A. Vigna-Gomez, S. Justham, I. Mandel, S. E. de Mink, P. Podsiadlowski. 2019. Massive Stellar Mergers as Precursors of Hydrogen-rich Pulsational Pair Instability Supernovae. *ApJ Letters* 876, L29. arXiv:1903.02135
36. I. Mandel, W. M. Farr, J. R. Gair. 2019. Extracting distribution parameters from multiple uncertain observations with selection biases. *MNRAS* 486, 1086. arXiv:1809.02063
37. G. P. Lamb et al. 2019. The optical afterglow of GW170817 at one year post-merger. *ApJ Letters* 870, L15. arXiv:1811.11491
38. S. Vinciguerra, M. Branchesi, R. Ciolfi, I. Mandel, C. Neijssel, G. Stratta. 2019. *saprEMo*: a simplified algorithm for predicting detections of electromagnetic transients in surveys. *MNRAS* 484, 332. arXiv:1809.08641
39. G. P. Lamb, I. Mandel, L. Resmi. 2018. Late-time Evolution of Afterglows from Off-Axis Neutron-Star Mergers. *MNRAS* 481, 2581. arXiv:1806.03843
40. A. Vigna-Gómez, C.-J. Neijssel, S. Stevenson, J. W. Barrett, K. Belczynski, S. Justham, S.E. de Mink, B. Müller, P. Podsiadlowski, M. Renzo, D. Szécsi, I. Mandel. 2018. On the formation history of Galactic double neutron stars. *MNRAS* 481, 4009. arXiv:1805.07974
41. W. M. Farr, I. Mandel. 2018. Comment on “An excess of massive stars in the local 30 Doradus starburst”. *Science* 361, 6400. arXiv:1807.09772
42. J. D. Lyman, G. P. Lamb, A. J. Levan, I. Mandel, N. R. Tanvir et al. 2018. The optical afterglow of the short gamma-ray burst associated with GW170817. *Nature Astronomy*. arXiv:1801.02669
43. J. W. Barrett, S. M. Gaebel, C. J. Neijssel, A. Vigna-Gómez, S. Stevenson, C. P. L. Berry, W. M. Farr, I. Mandel. 2018. Accuracy of inference on the physics of binary evolution from gravitational-wave observations. *MNRAS* 477, 4685. arXiv:1711.06287
44. M. Cantiello et al. 2018. A precise distance to the host galaxy of the binary neutron star merger GW170817 using surface brightness fluctuations. *ApJL* 854, L31. arXiv:1801.06080
45. I. Mandel. 2018. The orbit of GW170817 was inclined by less than 28 degrees to the line of sight. *ApJL* 853, L1. arXiv:1712.03958
46. I. Mandel, A. Sesana, A. Vecchio. 2018. The astrophysical science case for a decihertz gravitational-wave detector. *Classical and Quantum Gravity* 35, 054004. arXiv:1710.11187
47. N. R. Tanvir, A. J. Levan, C. Gonzalez-Fernandez, O. Korobkin, I. Mandel et al. 2017. The Emergence of a Lanthanide-rich Kilonova Following the Merger of Two Neutron Stars. *ApJL* 848, L27. arXiv:1710.05455
48. A. J. Levan, J. D. Lyman, N. R. Tanvir, J. Hjorth, I. Mandel et al. 2017. The environment of the binary neutron star merger GW170817. *ApJL* 848, L28. arXiv:1710.05444
49. J. Hjorth et al. 2017. The Distance to NGC 4993: The Host Galaxy of the Gravitational-wave Event GW170817. *ApJL* 848, L31. arXiv:1710.05866
50. B. P. Abbott et al. 2017. A gravitational-wave standard siren measurement of the Hubble constant. *Nature* 551, 85. arXiv:1710.05835
51. B. P. Abbott et al. 2017. Multi-messenger observations of a binary neutron star merger. *ApJL* 848, L12. arXiv:1710.05833
52. I. Mandel, A. Farmer. 2017. Gravitational waves: Stellar palaeontology. *Nature* 547, 284
53. W. M. Farr, S. Stevenson, M. C. Miller, I. Mandel, B. Farr, A. Vecchio. Distinguishing Spin-Aligned and Isotropic Black Hole Populations With Gravitational Waves. 2017. *Nature*, 548, 426. arXiv:1706.01385
54. P. Marchant, N. Langer, P. Podsiadlowski, T. Tauris, S. de Mink, I. Mandel, T. Moriya. 2017. Ultra-luminous X-ray sources and neutron-star-black-hole mergers from very massive close binaries at low metallicity. *A&A* 604, A55. arXiv:1705.04734



55. S. Stevenson, A. Vigna-Gómez, I. Mandel, J. W. Barrett, C. J. Neijssel, D. Perkins, S. E. de Mink. 2017. Forming GW151226 and LVT151012 through isolated binary evolution. *Nature Communications*, 8, 14906. arXiv:1704.01352
56. S. Stevenson, C. P. L. Berry, I. Mandel. 2017. Hierarchical analysis of gravitational-wave measurements of binary black hole spin-orbit misalignments. *MNRAS* 471, 2801. arXiv:1703.06873
57. B. Bradnick, I. Mandel, Y. Levin. 2017. Stellar binaries in galactic nuclei: tidally stimulated mergers followed by tidal disruptions. *MNRAS* 469, 2042. arXiv:1703.05796
58. S. Vinciguerra, J. Veitch, I. Mandel. 2017. Accelerating gravitational wave parameter estimation with multi-band template interpolation. *CQG*, 34, 115006. arXiv:1703.02062
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200. Abbott, B. et al. 2009. Stacked Search for Gravitational Waves from the 2006 SGR 1900+14 Storm. *Astrophysical Journal* 701(2), L68-L74.
201. Abbott, B. et al. 2009. Search for high frequency gravitational-wave bursts in the first calendar year of LIGO's fifth science run. *Physical Review D* 80(10), 102002.
202. Abbott, B. et al. 2009. All-Sky LIGO Search for Periodic Gravitational Waves in the Early Fifth-Science-Run Data. *Physical Review Letters* 102(11), 111102.
203. Abbott, B. et al. 2009. An upper limit on the stochastic gravitational-wave background of cosmological origin. *Nature* 460(7258), 990-994.
204. Abbott, B. et al. 2009. Search for gravitational-wave bursts in the first year of the fifth LIGO science run. *Physical Review D* 80(10), 102001.
205. Abbott, B. et al. 2009. Observation of a kilogram-scale oscillator near its quantum ground state. *New Journal of Physics* 11(7), 073032.
206. Abbott, B. et al. 2009. Search for gravitational waves from low mass compact binary coalescence in 186 days of LIGO's fifth science run. *Physical Review D* 80(4), 047101.

RECENTLY  
SUBMITTED  
PUBLICATIONS,  
CONFERENCE  
PROCEEDINGS

1. Rory Smith, Ssohrab Borhanian, Bangalore Sathyaprakash, Francisco Hernandez Vivanco, Scott Field, Paul Lasky, Ilya Mandel, Soichiro Morisaki, David Ottaway, Bram Slagmolen, Eric Thrane, Daniel Töyrä, Salvatore Vitale. 2021. Bayesian inference for gravitational waves from binary neutron star mergers in third-generation observatories. [arXiv:2103.12274](#)
2. F. S. Broekgaarden, E. Berger, C. J. Neijssel, A. Vigna-Gomez, 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. [arXiv:2103.02608](#)
3. L. Lin, D. Bingham, F. Broekgaarden, I. Mandel. Uncertainty quantification of a computer model for binary black hole formation. 2021. Submitted to *Annals of Applied Statistics*.
4. J. Riley, I. Mandel, P. Marchant, E. Butler, K. Nathaniel, C. Neijssel, S. Shortt, A. Vigna-Gomez. 2021. Chemically Homogeneous Evolution: A rapid population synthesis approach. [arXiv:2010.00002](#)
5. "I 'heart' Pluto" – we 'heart' it, mostly" (book review). I. Mandel. 2020. *Crystallography Reviews*
6. M. Bailes et al. 2019. Ground-Based Gravitational-Wave Astronomy in Australia: 2019 White Paper. [arXiv:1912.06305](#)
7. 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](#)



8. 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
9. 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
10. I. Mandel, A. Farmer. 2018. Merging stellar-mass binary black holes. arXiv:1806.05820
11. 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
12. 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>
13. 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
14. W. M. Farr, I. Mandel, C. Aldridge, K. Stroud. 2015. The Occurrence of Earth-Like Planets Around Other Stars. arXiv:1412.4849
15. M. Hendry et al. 2014. Education and public outreach on gravitational-wave astronomy. *General Relativity and Gravitation*, 46:1764.
16. R. M. Shannon et al. 2014. Summary of session C1: pulsar timing arrays. *General Relativity and Gravitation*, 46:1765.
17. M. Branchesi et al. 2014. C7 multi-messenger astronomy of GW sources. *General Relativity and Gravitation*, 46:1771.
18. I. Mandel et al. 2014. Relativistic astrophysics at GR20. *General Relativity and Gravitation*, 46:1688.
19. D. Buskulic and I. Mandel. 2013. LIGO and Virgo Gravitational-wave Detectors and Their Science Reach. *Acta Physica Polonica B* 44, 12, 2413.
20. I. Mandel, L. Z. Kelley, E. Ramirez-Ruiz. 2011. Towards improving the prospects for coordinated gravitational-wave and electromagnetic observations. arXiv:1111.0005
21. I. Mandel, R. O'Shaughnessy, V. Kalogera. 2010. Unravelling Binary Evolution from Gravitational-Wave Signals and Source Statistics. arXiv:1001.2583
22. 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
23. 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
24. 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
25. 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 GWDAAW-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 GWPAAW, 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”

SELECTED  
OUTREACH  
ACTIVITIES

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

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-pai>

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-s.aspx>

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>

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-fbclid=IwAR1fnPhS5Wmsh8xe1y\\_c5QOGMBG23VgF\\_36U13CzC12of9Gk3FTk8hPj-Bg](http://spaceaustralia.com/news/modelling-evolution-double-fbclid=IwAR1fnPhS5Wmsh8xe1y_c5QOGMBG23VgF_36U13CzC12of9Gk3FTk8hPj-Bg)

4/2020 Source for phys.org article <https://phys.org/news/2020-03-unravelling-mystery-black-holes-sc.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](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 AIP 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-science-to-predict-earth-s-future-climate.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-mass-black-hole-in-the-milky-way-is-more-massive-than-we-thought>

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>