

A. SYLVIA BISCOVEANU

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EDUCATION

Massachusetts Institute of Technology, <i>Cambridge, MA</i>	2018–2023
Ph.D. in Physics, June 2023	
<i>From black holes to the Big Bang: astrophysics and cosmology with gravitational waves and their electromagnetic counterparts</i> , advisor Salvatore Vitale	
The Pennsylvania State University, <i>State College, PA</i>	2013–2017
B.S. in Physics and B.A. in Spanish, May 2017	GPA: 4.0
Schreyer Honors Scholar and Paterno Fellow	
Minors in Mathematics and Music Performance (violin and viola)	
<i>Determining the Mass Composition of Ultra High Energy Cosmic Rays Using the Principle of Shower Universality and Data from the Pierre Auger Observatory</i> , advisor Miguel Mostafá	

RESEARCH INTERESTS

Gravitational-wave data analysis, black holes, neutron stars, multimessenger astronomy, compact-object binaries, stochastic gravitational-wave backgrounds, next-generation gravitational-wave detectors

EXPERIENCE

NASA Einstein Fellow	Sept. 2023–present
CIERA, Northwestern University	<i>Evanston, IL</i>
Research Specialist	May 2023–July 2023
Graduate Research Fellow	Sept. 2018–May 2023
LIGO Laboratory, Massachusetts Institute of Technology	<i>Cambridge, MA</i>
Fulbright Postgraduate Fellow	Sept. 2017–June 2018
Monash University	<i>Clayton, VIC</i>
OzGrav: The ARC Centre of Excellence for Gravitational-Wave Discovery	

FELLOWSHIPS AND HONORS

NASA Hubble Fellowship Program - Einstein Fellowship	2023–2026
Northwestern CIERA Fellowship	2026–2029
APS Cecilia Payne-Gaposchkin Doctoral Dissertation Award in Astrophysics Finalist	2024
IAU Division D Thesis Prize Honorable Mention	2023
NSF Astronomy and Astrophysics Postdoctoral Fellowship (declined)	2023
Charlotte Mateer Obert Named PEO Scholar Award	2022
MIT Physics Department Alan H. Barrett Prize	2021
NSF Graduate Research Fellowship	2018–2023
Paul And Daisy Soros Fellowship for New Americans	2018–2020
Monash University Faculty of Science Young Leader Award	2018
Fulbright Postgraduate Scholarship – Australia	2017–2018
Student Marshal – Penn State Eberly College of Science	2017
Student Marshal – Penn State Department of Spanish, Italian, and Portuguese	2017

Penn State Schreyer Honors College Channa and Usharani Reddy Mission Award	2017
Barry Goldwater Scholarship Award	2016
Astronaut Scholarship Foundation Award	2016
Caltech Summer Undergraduate Research Fellowship	2016
NSF International REU - University of Florida & Monash University	2015
Penn State University and Physics Department Honors	2013-2017
NASA Space Grant for Women in Science and Engineering Research	2013-2014

SELECT PUBLICATIONS

As a member of the LIGO Scientific Collaboration since 2015, I am a co-author on over 100 full-collaboration papers. Highlighted below are those to which I have made a direct personal contribution.

1. E. Sanger et al., *Tests of General Relativity with GW230529: a neutron star merging with a lower mass-gap compact object*, submitted to PRD (2024), arXiv:2406.03568
2. S. Ronchini et al., *Constraining possible γ -ray burst emission from GW230529 using Swift-BAT and Fermi-GBM*, submitted to ApJL (2024), arXiv:2405.10752
3. The LIGO-Virgo-KAGRA Collaboration including **A.S. Biscoveanu** as paper manager, *Observation of Gravitational Waves from the Coalescence of a 2.5-4.5 M_{\odot} Compact Object and a Neutron Star*, accepted in ApJL (2024), arXiv:2404.04248
4. K. Krishna et al., *Accelerated parameter estimation in Bilby with relative binning*, (2023), arXiv:2312.06009
5. J. Heinzl, **A.S. Biscoveanu**, S. Vitale, *Probing Correlations in the Binary Black Hole Population with Flexible Models*, Phys. Rev. D 109, 103006 (2024), arXiv:2312.00993
6. I. Gupta et al., *Characterizing Gravitational Wave Detector Networks: From A# to Cosmic Explorer*, accepted in CQG (2023), arXiv:2307.10421
7. **A.S. Biscoveanu**, E. Burns, P. Landry, and S. Vitale, *An observational upper limit on the rate of gamma-ray bursts with neutron star-black hole merger progenitors*, RNAAS 7 136 (2023), arXiv:2306.14974
8. M. Evans et al., *Cosmic Explorer: A Submission to the NSF MPSAC ngGW Subcommittee*, (2023), arXiv:2306.13745
9. A. Renzini et al., *pygwb: A Python-based Library for Gravitational-wave Background Searches*, ApJ 952 25 (2023), arXiv:2303.15696
10. S. Vitale, **A.S. Biscoveanu**, and C. Talbot, *Spin it as you like: the (lack of a) measurement of the spin tilt distribution with LIGO-Virgo-KAGRA binary black holes*, A&A 668 L2 (2022), arXiv:2209.06978
11. **A.S. Biscoveanu**, P. Landry, S. Vitale, *Population properties and multimessenger prospects of neutron star-black hole mergers following GWTC-3*, MNRAS 518, 5298 (2022), arXiv:2207.01568
12. **A.S. Biscoveanu**, K. Kremer, E. Thrane, *Probing the efficiency of tidal synchronization in outspiral double white dwarf binaries with LISA*, ApJ 949, 95 (2023), arXiv:2206.15390
13. **A.S. Biscoveanu**, T.A. Callister, C.-J. Haster, K.K.Y. Ng, S. Vitale, W.M. Farr, *The binary black hole spin distribution likely broadens with redshift*, ApJL 932 L19 (2022), arXiv:2204.01578
14. S. Vitale, **A.S. Biscoveanu**, and C. Talbot, *The orientations of the binary black holes in GWTC-3*, (2022), arXiv:2204.00968
15. V. Varma, **A.S. Biscoveanu**, T. Islam, F.H. Shaik, C.-J. Haster, M. Isi, W.M. Farr, S.E. Field, S. Vitale, *Evidence of large recoil velocity from a black hole merger signal*, Phys. Rev. Lett. 128, 191102 (2022), arXiv:2201.01302
16. **A.S. Biscoveanu**, C. Talbot, S. Vitale, *The effect of spin mismodeling on gravitational-wave measurements of the binary neutron star mass distribution*, MNRAS 511, 4350 (2022), arXiv:2111.13619
17. R. Abbott et al., *The population of merging compact binaries inferred using gravitational waves through GWTC-3*, Phys. Rev. X 13, 011048 (2023), arXiv:2111.03634
18. D. Frostig, **A.S. Biscoveanu** et al., *An Infrared Search for Kilonovae with the WINTER Telescope. I. Binary Neutron Star Mergers*, ApJ 926, 152 (2022), arXiv:2110.01622

19. M. Evans et al., *A Horizon Study for Cosmic Explorer: Science, Observatories, and Community*, (2021), arXiv:2109.09882
20. V. Varma, **A.S. Biscoveanu**, M. Isi, W.M. Farr, S. Vitale, *Hints of spin-orbit resonances in the binary black hole population*, Phys. Rev. Lett. 128, 031101 (2022), arXiv:2107.09693
21. V. Varma, M. Isi, **A.S. Biscoveanu**, W.M. Farr, S. Vitale, *Measuring binary black hole orbital-plane spin orientations*, Phys. Rev. D 105, 024045 (2022), arXiv:2107.09692
22. **A.S. Biscoveanu**, *Characterizing gravitational-wave sources with likelihood reweighting*, Nat. Rev. Phys. 4, 5 (2022), DOI: 10.1038/s42254-021-00404-4
23. C. Talbot, E. Thrane, **A.S. Biscoveanu**, R. Smith, *Inference with finite time series: Observing the gravitational Universe through windows*, Phys. Rev. Research 3, 043049 (2021), arXiv:2106.13785
24. **A.S. Biscoveanu**, M. Isi, V. Varma, S. Vitale, *Measuring the spins of heavy binary black holes*, Phys. Rev. D 104, 103018 (2021), arXiv:2106.06492
25. **A.S. Biscoveanu**, C. Talbot, E. Thrane, R. Smith, *Measuring the primordial gravitational-wave background in the presence of astrophysical foregrounds*, Phys. Rev. Lett. 125, 241101 (2020), arXiv:2009.04418
26. **A.S. Biscoveanu**, M. Isi, S. Vitale, V. Varma, *New spin on LIGO-Virgo binary black holes*, Phys. Rev. Lett. 126, 171103 (2021), arXiv:2007.09156
27. Y. Huang et al., *Statistical and systematic uncertainties in extracting the source properties of neutron star - black hole binaries with gravitational waves*, Phys. Rev. D 103, 083001 (2021), arXiv:2005.11850
28. I. Romero-Shaw, C. Talbot, **A.S. Biscoveanu** et al., *Bayesian inference for compact binary coalescences with BILBY: Validation and application to the first LIGO-Virgo gravitational-wave transient catalogue*, MNRAS 499, 3 (2020), arXiv:2006.00714
29. M. Safarzadeh, **A.S. Biscoveanu**, A. Loeb, *Constraining the delay time distribution of compact binary objects from the stochastic gravitational wave background searches*, ApJ 901, 2 (2020), arXiv:2004.12999
30. **A.S. Biscoveanu**, C.-J. Haster, S. Vitale, J. Davies, *Quantifying the Effect of Power Spectral Density Uncertainty on Gravitational-Wave Parameter Estimation for Compact Binary Sources*, Phys. Rev. D 102, 023008 (2020), arXiv:2004.05149
31. V. Varma, M. Isi, **A.S. Biscoveanu**, *Extracting the Gravitational Recoil from Black Hole Merger Signals*, Phys. Rev. Lett. 124, 101104 (2020), arXiv:2002.00296
32. **A.S. Biscoveanu**, E. Thrane, S. Vitale, *Constraining short gamma-ray burst jet properties with gravitational waves and gamma rays*, ApJ 893, 38 (2020), arXiv:1911.01379
33. **A.S. Biscoveanu**, S. Vitale, C.-J. Haster, *The reliability of the low-latency estimation of binary neutron star chirp mass*, ApJL 884, L32 (2019), arXiv:1908.03592
34. G. Ashton et al., *Bilby: A user-friendly Bayesian inference library for gravitational-wave astronomy*, ApJS 241, 27 (2019), arXiv:1811.02042
35. B. P. Abbott et al., *Search for Tensor, Vector, and Scalar Polarizations in the Stochastic Gravitational-Wave Background*, Phys. Rev. Lett. 120, 201102 (2018), arXiv:1802.10194
36. T.A. Callister, **A.S. Biscoveanu** et al., *Polarization-based Tests of Gravity with the Stochastic Gravitational-Wave Background*, Phys. Rev. X 7, 041058 (2017), arXiv:1704.08373
37. B. P. Abbott et al., *Upper Limits on the Stochastic Gravitational-Wave Background from Advanced LIGO's First Observing Run*, Phys. Rev. Lett., 118, 121101 (2017), arXiv:1612.02029
38. B. P. Abbott et al., *Directional limits on persistent gravitational waves from Advanced LIGO's first observing run*, Phys. Rev. Lett., 118, 121102 (2017) arXiv:1612.02030

INVITED PRESENTATIONS

1. IAU 389 Gravitational Wave Astrophysics Plenary <i>Cape Town, South Africa</i>	Aug. 2024
2. AAS 244: Astronomy with Neutrinos and other Messengers, <i>Madison, WI</i>	June 2024
3. CIFAR Gravity & Extreme Universe Meeting, <i>Whitehorse, Canada</i>	June 2024
4. HEAD 21: Illuminating the Formation Channels of Compact Binaries with Gravitational Waves <i>Horseshoe Bay, TX</i>	April 2024

5. APS April 2024: CPG Dissertation Award Finalist Session, <i>Sacramento, CA</i>	April 2024
6. APS April 2024: Multi-“Messengers” from Future Facilities, <i>Sacramento, CA</i>	April 2024
7. Notre Dame Astrophysics Seminar, <i>Notre Dame, IN</i>	Nov. 2023
8. University of Mississippi Physics and Astronomy Colloquium, <i>Oxford, MI</i>	Oct. 2023
9. Gravitational-wave populations: what’s next? <i>Milan, Italy</i>	July 2023
10. Princeton Gravity Initiative Seminar, <i>Princeton, NJ</i>	Nov. 2022
11. Johns Hopkins Particle Theory Seminar, <i>Baltimore, MD</i>	Nov. 2022
12. Perimeter Institute Strong Gravity Seminar, <i>Waterloo, Canada</i>	Oct. 2022
13. Caltech TAPIR Seminar, <i>Pasadena, CA</i>	Oct. 2022
14. UC Berkeley Explosive Astro Seminar, <i>Berkeley, CA</i>	Oct. 2022
15. Northwestern CIERA Theory Seminar, <i>Evanston, IL</i>	Oct. 2022
16. UChicago KICP Seminar, <i>Chicago, IL</i>	Oct. 2022
17. AEI Astrophysical and Cosmological Relativity Seminar, <i>Potsdam, Germany</i>	Sept. 2022
18. Physics and Astrophysics at the eXtreme (PAX-VIII) Panelist, <i>Cambridge, MA</i>	Aug. 2022
19. Harvard LPPC Seminar, <i>Cambridge, MA</i>	May 2022
20. UWM CGCA Seminar, <i>virtual</i>	March 2022
21. IPAM Workshop: Mathematical and Computational Challenges in the Era of GW Astronomy	
Workshop III, <i>Los Angeles, CA</i>	Nov. 2021
Tutorial Workshop, <i>virtual</i>	Sept. 2021
22. Perimeter Institute Strong Gravity Seminar, <i>virtual</i>	Nov. 2021
23. Gravitational Wave Astronomy Northwest Student Workshop, <i>virtual</i>	June 2021
24. MIT Kavli Institute Brown Bag Lunch Seminar, <i>virtual</i>	March 2021
25. Brown University ICERM Workshop, <i>virtual</i>	Nov. 2020
Statistical Methods for the Detection, Classification, and Inference of Relativistic Objects	
26. Harvard Black Hole Initiative Colloquium, <i>virtual</i>	Nov. 2020
27. Gravitational-Wave Open Data Workshop #3, <i>virtual</i>	May 2020
28. TEDxFulbrightCanberra, <i>Canberra, ACT</i>	May 2018
“The Cosmic Gravitational-Wave Symphony”	
29. Penn State Primordial Universe and Gravity Seminar, <i>State College, PA</i>	April 2017
30. University of Melbourne Astrophysics Colloquium, <i>Melbourne, VIC</i>	July 2015

CONTRIBUTED PRESENTATIONS

1. 33rd Midwest Relativity Meeting , <i>Chicago, IL</i>	Nov. 2023
Probing Correlations in the Binary Black Hole Population with Flexible Models	
2. American Physical Society April Meeting , <i>Minneapolis, MN</i>	April 2023
Population properties and multimessenger prospects of neutron star-black hole mergers following GWTC-3	
3. AAS High Energy Astrophysics Division Meeting , <i>Waikoloa, HI</i>	March 2023
Probing the effect of tides in outspiralling double white dwarf binaries with LISA	
4. 241st Meeting of the American Astronomical Society , <i>Seattle, WA</i>	Jan. 2023
From black holes to the Big Bang: astrophysics and cosmology with gravitational waves and their electromagnetic counterparts	
5. Gravitational Wave Physics and Astronomy Workshop , <i>Melbourne, AU</i>	Dec. 2022
Population properties and multimessenger prospects of neutron star-black hole mergers following GWTC-3	
6. International Workshop on AM CVn binaries 4.5 , <i>virtual</i>	Aug. 2022
Probing the effect of tides in outspiraling double white dwarf binaries with LISA	
7. American Physical Society April Meeting , <i>New York, NY</i>	April 2022
Sources of systematic error in gravitational-wave measurements of the binary neutron star mass distribution	
8. 14th Edoardo Amaldi Conference on Gravitational Waves , <i>virtual</i>	July 2021
Measuring the spins of heavy binary black holes	

9. **European Astronomical Society Meeting**, *virtual* July 2021
The Multimessenger Discovery Potential of the Wide-Field Infrared Transient Explorer
10. **American Physical Society April Meeting**, *virtual* April 2021
Simultaneous Measurement of a Cosmological Stochastic Background and an Astrophysical Foreground
11. **237th Meeting of the American Astronomical Society**, *virtual* Jan. 2021
A new spin on LIGO-Virgo binary black holes
12. **235th Meeting of the American Astronomical Society**, *Honolulu, HI* Jan. 2020
The Reliability of the Low-Latency Estimation of Binary Neutron Star Chirp Mass
13. **American Physical Society April Meeting**, *Denver, CO* April 2019
Constraining Short Gamma-Ray Burst Jet Properties Using Coincident Gravitational-Wave and Electromagnetic Detections
14. **American Physical Society New England Section Meeting**, *Dartmouth, MA* Nov. 2018
Constraining the Jet Properties of GRBs with Multimessenger Astronomy
15. **9th ACGRG**, *Gingin, WA* Nov. 2017
Constraining GRB Jet Properties Using Coincident GW/EM Detections
16. **LIGO-Virgo Collaboration Meeting**, *Pasadena, CA* March 2017
Stochastic Search for Non-GR Polarizations
Best Data Analysis Poster
17. **American Physical Society April Meeting**, *Salt Lake City, UT* April 2016
Determining the Mass Composition of Cosmic Rays Using Shower Universality
18. **Pierre Auger Collaboration Meeting**, *Malargüe, Argentina* March 2016
Elongation Rate Using the EL Universal Reconstruction
19. **American Physical Society April Meeting**, *Baltimore, MD* April 2015
Extending the Measurement of Shower Maximum to the Highest Energies Using Universality and Data from the Surface Detector of the Pierre Auger Observatory
20. **American Physical Society Mid-Atlantic Section Meeting**, *State College, PA* Oct. 2014
Determining the Particle Identity of Ultra-High Energy Cosmic Rays

TEACHING AND MENTORSHIP

Graduate Teaching Assistant Jan. 2022
Department of Physics, Massachusetts Institute of Technology *Cambridge, MA*
Introduction to Special Relativity

Learning Assistant Jan. 2014-Dec. 2016
The Pennsylvania State University *State College, PA*
Introductory Mechanics (Spring 2014)
Introduction to Quantum Mechanics I (Fall 2016)

Research Mentorship
Lillie Szemraj, Princeton Summer 2024
Jessica Cotturone, Augustana College Summer 2024
Nico Bers, Northwestern Fall 2023-present
Darsan Bellie, Northwestern (PhD student) Fall 2023–Spring 2024
Nadia Qutob, Georgia Tech Summer 2022
Claire Williams, Carleton College (PhD - UCLA) Summer and Fall 2020
Kaylee de Soto, MIT (PhD - Penn State) Summer 2020
Jonathan Davies, Imperial College London (PhD - University of Manchester) Summer 2019

Mentor, Gravitational-Wave Open Data Workshop May 2020, 2021, 2023
Develop and lead a series of tutorials introducing gravitational-wave data analysis techniques using open data

Career Mentorship

CIERA Mentorship Program

AY 2023

Goldwater Scholarship Mentorship Program

AY 2022

MIT Women in Physics Mentorship Program

AY 2018

SERVICE AND OUTREACH

Astronomy Conversations Volunteer, Adler Planetarium

April 2024–present

Lead discussion and presentation sessions on a broad range of astrophysics topics with museum guests

Chair, Code of Conduct Committee, Northwestern CIERA

May 2024–present

Lead the development of a CIERA Community Values Statement

Student Representative, LIGO Academic Advisory Committee

Sept. 2021–Nov. 2023

Advocate for early career scientists in the LIGO Collaboration through career development and social programming

Referee, ApJ, ApJL, Phys. Rev. Lett., Phys. Rev. D, JCAP

2020–present

Research Project Leader, Warrior-Scholar Project

July 2020, 2021, 2022

Design and lead a gravitational-wave research project for veterans transitioning from active service to an academic setting

Student organizer, MIT Kavli Institute Journal Club

AYs 2019, 2020

Arrange and introduce weekly speakers to present on new papers and preprints to the MIT Kavli community