A. SYLVIA BISCOVEANU

327 Jadwin Hall, Washington Road, Princeton, NJ 08544-0708
sbisco@princeton.edu ⋄ updated August 15, 2025

EXPERIENCE

Assistant Professor of Physics Sept. 2025–
Department of Physics, Princeton University *Princeton, NJ*

NASA Einstein Fellow Sept. 2023–Aug. 2025
CIERA, Northwestern University *Evanston, IL*

Research Specialist May 2023–July 2023
Graduate Research Fellow Sept. 2018–May 2023
LIGO Laboratory, Massachusetts Institute of Technology *Cambridge, MA*

Fulbright Postgraduate Fellow Sept. 2017–June 2018
Monash University *Clayton, VIC*
OzGrav: The ARC Centre of Excellence for Gravitational-Wave Discovery

RESEARCH INTERESTS

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

EDUCATION

Massachusetts Institute of Technology, *Cambridge, MA* 2018–2023
Ph.D. in Physics, June 2023
From black holes to the Big Bang: astrophysics and cosmology with gravitational waves and their electromagnetic counterparts, advisor Salvatore Vitale

The Pennsylvania State University, *State College, PA* 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)
Determining the Mass Composition of Ultra High Energy Cosmic Rays Using the Principle of Shower Universality and Data from the Pierre Auger Observatory, advisor Miguel Mostafá

FELLOWSHIPS AND HONORS

Forbes 30 Under 30 in Science, North America 2025
NASA Hubble Fellowship Program - Einstein Fellowship 2023-2026
Northwestern CIERA Fellowship 2026-2029
APS Cecilia Payne-Gaposchkin Doctoral Dissertation Award in Astrophysics Finalist 2024
GWIC-Braccini Thesis Prize 2023
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. * indicates student advisee

1. L. Szemraj*, **A.S. Biscoveanu**, *Disentangling spinning and nonspinning binary black hole populations with spin sorting*, submitted to CQG (2025), arXiv:2507.23663
2. J. Cotturone*, M. Zevin, **A.S. Biscoveanu**, *Characterizing Compact Object Binaries in the Lower Mass Gap with Gravitational Waves*, submitted to ApJ (2025), arXiv:2507.01189
3. N. Bers*, **A.S. Biscoveanu**, *Probing the peak of star formation with the stochastic background of binary black hole mergers*, submitted to ApJ (2025), arXiv:2506.21868
4. **A.S. Biscoveanu**, *Probing Spin-Orbit Resonances with the Binary Black Hole Population*, submitted to ApJ (2025), arXiv:2502.04278
5. F. Kıroğlu, K. Kremer, **A.S. Biscoveanu**, et al., *Black Hole Accretion and Spin-up Through Stellar Collisions in Dense Star Clusters*, ApJ 979, 237 (2025), arXiv:2410.01879
6. E. Sänger 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
7. S. Ronchini et al., *Constraining possible γ-ray burst emission from GW230529 using Swift-BAT and Fermi-GBM*, ApJL 970 L20 (2024), arXiv:2405.10752
8. 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*, ApJL 970, L34 (2024), arXiv:2404.04248
9. K. Krishna et al., *Accelerated parameter estimation in Bilby with relative binning*, (2023), arXiv:2312.06009
10. J. Heinzel, **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
11. I. Gupta et al., *Characterizing Gravitational Wave Detector Networks: From A# to Cosmic Explorer*, Class. Quant. Grav. 41, 245001 (2024), arXiv:2307.10421
12. **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
13. M. Evans et al., *Cosmic Explorer: A Submission to the NSF MPSAC ngGW Subcommittee*, (2023), arXiv:2306.13745
14. A. Renzini et al., *pygwb: A Python-based Library for Gravitational-wave Background Searches*, ApJ 952 25 (2023), arXiv:2303.15696
15. 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
16. **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
17. **A.S. Biscoveanu**, K. Kremer, E. Thrane, *Probing the efficiency of tidal synchronization in outspiralling double white dwarf binaries with LISA*, ApJ 949, 95 (2023), arXiv:2206.15390
18. **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
19. S. Vitale, **A.S. Biscoveanu**, and C. Talbot, *The orientations of the binary black holes in GWTC-3*, (2022), arXiv:2204.00968
20. 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
21. **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
22. The LIGO-Virgo-KAGRA Collaboration, *The population of merging compact binaries inferred using gravitational waves through GWTC-3*, Phys. Rev. X 13, 011048 (2023), arXiv:2111.03634
23. 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
24. M. Evans et al., *A Horizon Study for Cosmic Explorer: Science, Observatories, and Community*, (2021), arXiv:2109.09882
25. 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
26. 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
27. **A.S. Biscoveanu**, *Characterizing gravitational-wave sources with likelihood reweighting*, Nat. Rev. Phys. 4, 5 (2022), DOI: 10.1038/s42254-021-00404-4
28. 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
29. **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
30. **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
31. **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
32. 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
33. 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
34. 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
35. **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
36. 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
37. **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
38. **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
39. G. Ashton et al., *Bilby: A user-friendly Bayesian inference library for gravitational-wave astron-*

omy, ApJS 241, 27 (2019), arXiv:1811.02042

40. The LIGO-Virgo-KAGRA Collaboration, *Search for Tensor, Vector, and Scalar Polarizations in the Stochastic Gravitational-Wave Background*, Phys. Rev. Lett. 120, 201102 (2018), arXiv:1802.10194
41. 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
42. The LIGO-Virgo-KAGRA Collaboration, *Upper Limits on the Stochastic Gravitational-Wave Background from Advanced LIGO's First Observing Run*, Phys. Rev. Lett., 118, 121101 (2017), arXiv:1612.02029
43. The LIGO-Virgo-KAGRA Collaboration, *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. Penn State Physics Colloquium, *State College, PA* — Oct. 2025
2. Harvard ITC Colloquium, *Cambridge, MA* — Oct. 2025
3. Taking Black Hole Spin Measurements for a Spin Workshop, *Winston-Salem, NC* — Sept. 2025
4. Niels Bohr Institute Current Themes Workshop, *Copenhagen, Denmark* — Aug. 2025
5. GR24/Amaldi16 GWIC-Braccini Thesis Prize Plenary, *Glasgow, Scotland* — July 2025
6. Brown University ICERM Workshop, *Providence, RI* — June 2025
   Scientific Machine Learning for Gravitational Wave Astronomy Discussion Leader
7. Harvard Black Hole Initiative Annual Conference, *Cambridge, MA* — April 2025
8. LSST Discovery Alliance Data Science Fellowship Program Lecturer, *Pittsburgh, PA* — April 2025
9. Ohio State Physics Department Colloquium, *Columbus, OH* — Nov. 2024
10. Penn State Gravity, Astroparticle and Particle Physics Seminar, *State College, PA* — Oct. 2024
11. Minnesota Institute for Astrophysics Colloquium, *Minneapolis, MN* — Oct. 2024
12. IAU 389: Gravitational Wave Astrophysics Plenary, *Cape Town, South Africa* — Aug. 2024
13. Next-Generation Detectors Mock Data Challenge Workshop, *State College, PA* — June 2024
14. AAS 244: Astronomy with Neutrinos and other Messengers, *Madison, WI* — June 2024
15. CIFAR Gravity & Extreme Universe Meeting, *Whitehorse, Canada* — June 2024
16. HEAD 21: Illuminating the Formation Channels of Compact Binaries with Gravitational Waves
    Horseshoe Bay, TX — April 2024
17. APS April 2024: CPG Dissertation Award Finalist Session, *Sacramento, CA* — April 2024
18. APS April 2024: Multi-"Messengers" from Future Facilities, *Sacramento, CA* — April 2024
19. Notre Dame Astrophysics Seminar, *Notre Dame, IN* — Nov. 2023
20. University of Mississippi Physics and Astronomy Colloquium, *Oxford, MI* — Oct. 2023
21. Gravitational-wave populations: what's next? *Milan, Italy* — July 2023
22. Princeton Gravity Initiative Seminar, *Princeton, NJ* — Nov. 2022
23. Johns Hopkins Particle Theory Seminar, *Baltimore, MD* — Nov. 2022
24. Perimeter Institute Strong Gravity Seminar, *Waterloo, Canada* — Oct. 2022
25. Caltech TAPIR Seminar, *Pasadena, CA* — Oct. 2022
26. UC Berkeley Explosive Astro Seminar, *Berkeley, CA* — Oct. 2022
27. Northwestern CIERA Theory Seminar, *Evanston, IL* — Oct. 2022
28. UChicago KICP Seminar, *Chicago, IL* — Oct. 2022
29. AEI Astrophysical and Cosmological Relativity Seminar, *Potsdam, Germany* — Sept. 2022
30. Physics and Astrophysics at the eXtreme (PAX-VIII) Panelist, *Cambridge, MA* — Aug. 2022
31. Harvard LPPC Seminar, *Cambridge, MA* — May 2022
32. UWM CGCA Seminar, *virtual* — March 2022
33. IPAM Workshop: Mathematical and Computational Challenges in the Era of GW Astronomy
    Workshop III, *Los Angeles, CA* — Nov. 2021
    Tutorial Workshop, *virtual* — Sept. 2021
34. Perimeter Institute Strong Gravity Seminar, *virtual* — Nov. 2021
35. Gravitational Wave Astronomy Northwest Student Workshop, *virtual* — June 2021
36. MIT Kavli Institute Brown Bag Lunch Seminar, *virtual* — March 2021

37. Brown University ICERM Workshop, *virtual* Nov. 2020
    Statistical Methods for the Detection, Classification, and Inference of Relativistic Objects
38. Harvard Black Hole Initiative Colloquium, *virtual* Nov. 2020
39. Gravitational-Wave Open Data Workshop #3, *virtual* May 2020
40. TEDxFulbrightCanberra, *Canberra, ACT* May 2018
    "The Cosmic Gravitational-Wave Symphony"
41. Penn State Primordial Universe and Gravity Seminar, *State College, PA* April 2017
42. University of Melbourne Astrophysics Colloquium, *Melbourne, VIC* July 2015

CONTRIBUTED PRESENTATIONS

1. **GR24/Amaldi16,** *Glasgow, Scotland* July 2025
   Probing Spin-Orbit Resonances with the Binary Black Hole Population
2. **246$^{\text{th}}$ Meeting of American Astronomical Society** *Anchorage, AL* June 2025
   Probing the peak of star formation with the stochastic background of binary black hole mergers
3. **33$^{\text{rd}}$ Midwest Relativity Meeting,** *Chicago, IL* Nov. 2023
   Probing Correlations in the Binary Black Hole Population with Flexible Models
4. **American Physical Society April Meeting,** *Minneapolis, MN* April 2023
   Population properties and multimessenger prospects of neutron star-black hole mergers following GWTC-3
5. **AAS High Energy Astrophysics Division Meeting,** *Waikoloa, HI* March 2023
   Probing the effect of tides in outspiralling double white dwarf binaries with LISA
6. **241$^{\text{st}}$ Meeting of the American Astronomical Society,** *Seattle, WA* Jan. 2023
   From black holes to the Big Bang: astrophysics and cosmology with gravitational waves and their electromagnetic counterparts
7. **Gravitational Wave Physics and Astronomy Workshop,** *Melbourne, AU* Dec. 2022
   Population properties and multimessenger prospects of neutron star-black hole mergers following GWTC-3
8. **International Workshop on AM CVn binaries 4.5,** *virtual* Aug. 2022
   Probing the effect of tides in outspiraling double white dwarf binaries with LISA
9. **American Physical Society April Meeting,** *New York, NY* April 2022
   Sources of systematic error in gravitational-wave measurements of the binary neutron star mass distribution
10. **14$^{\text{th}}$ Edoardo Amaldi Conference on Gravitational Waves,** *virtual* July 2021
    Measuring the spins of heavy binary black holes
11. **European Astronomical Society Meeting,** *virtual* July 2021
    The Multimessenger Discovery Potential of the Wide-Field Infrared Transient Explorer
12. **American Physical Society April Meeting,** *virtual* April 2021
    Simultaneous Measurement of a Cosmological Stochastic Background and an Astrophysical Foreground
13. **237$^{\text{th}}$ Meeting of the American Astronomical Society,** *virtual* Jan. 2021
    A new spin on LIGO-Virgo binary black holes
14. **235$^{\text{th}}$ Meeting of the American Astronomical Society,** *Honolulu, HI* Jan. 2020
    The Reliability of the Low-Latency Estimation of Binary Neutron Star Chirp Mass
15. **American Physical Society April Meeting,** Denver, CO April 2019
    Constraining Short Gamma-Ray Burst Jet Properties Using Coincident Gravitational-Wave and Electromagnetic Detections
16. **American Physical Society New England Section Meeting,** *Dartmouth, MA* Nov. 2018
    Constraining the Jet Properties of GRBs with Multimessenger Astronomy
17. **9$^{\text{th}}$ ACGRG,** *Gingin, WA* Nov. 2017
    Constraining GRB Jet Properties Using Coincident GW/EM Detections
18. **LIGO-Virgo Collaboration Meeting,** *Pasadena, CA* March 2017

Stochastic Search for Non-GR Polarizations
Best Data Analysis Poster

19. **American Physical Society April Meeting,** *Salt Lake City, UT* April 2016
Determining the Mass Composition of Cosmic Rays Using Shower Universality
20. **Pierre Auger Collaboration Meeting,** *Malargüe, Argentina* March 2016
Elongation Rate Using the El Universal Reconstruction
21. **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
22. **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-present
Jessica Cotturone, Augustana College	Summer 2024-present
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	AYs 2023, 2024
Goldwater Scholarship Mentorship Program	AY 2022
MIT Women in Physics Mentorship Program	AY 2018

SERVICE AND OUTREACH

Astronomy Conversations Volunteer, Adler Planetarium April 2024–Aug.2025
Lead discussion and presentation sessions on a broad range of astrophysics topics with museum guests

Chair, Code of Conduct Committee, Northwestern CIERA May 2024–Aug. 2025
Lead the development of a CIERA Community Values Statement and serve as the representative on the Justice, Equity, Diversity, and Inclusion Committee

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

Reviewer 2020–present
ApJ, ApJL, Phys. Rev. Lett., Phys. Rev. D, JCAP, NASA ATP

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