

A. SYLVIA BISCOVEANU

185 Albany Street, Cambridge, MA 02139
+1 (617) 253-8160 ◊ sbisco@mit.edu ◊ updated April 5, 2022

EDUCATION

Massachusetts Institute of Technology, *Cambridge, MA* Expected: 2023
Ph.D. in Physics
Field: Gravitational-wave astrophysics

The Pennsylvania State University, *State College, PA* 2013–2017
B.S. in Physics and B.A. in Spanish 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

EXPERIENCE

Graduate Research Assistant, Sept. 2018–present
LIGO Laboratory, Massachusetts Institute of Technology *Cambridge, MA*
Thesis advisor: Salvatore Vitale

Associate Investigator Sept. 2017–present
OzGrav: The ARC Centre of Excellence for Gravitational-Wave Discovery *Melbourne, VIC*

Fulbright Postgraduate Fellow Sept. 2017–June 2018
Monash University *Clayton, VIC*
Gravitational-wave data analysis with LIGO
Advisor: Eric Thrane

Undergraduate Research Assistant Jan. 2014–May 2017
The Pennsylvania State University *State College, PA*
NASA Space Grant for Women in Science and Engineering Research
Ultra high-energy cosmic ray mass composition with the Pierre Auger Observatory
Advisor: Miguel Mostafá

Summer Undergraduate Research Fellow June 2016–Sept. 2016
LIGO Laboratory, The California Institute of Technology *Pasadena, CA*
Searching for non-tensorial polarizations in the stochastic gravitational-wave background

Undergraduate Research Assistant Sept. 2015–Dec. 2015
Universidad Complutense de Madrid *Madrid, Spain*
Ultra high-energy cosmic ray mass composition with the Pierre Auger Observatory
Advisor: Fernando Arqueros

Summer Undergraduate Research Assistant June. 2015–Aug. 2015
Monash University *Clayton, VIC*
Correlated Magnetic Noise in the Advanced LIGO Detector
Advisor: Eric Thrane

SELECT PUBLICATIONS

1. **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*, (2022), arXiv:2204.01578
2. S. Vitale, **A.S. Biscoveanu**, and C. Talbot, *The orientations of the binary black holes in GWTC-3*, (2022), arXiv:2204.00968
3. 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* (2022), arXiv:2201.01302
4. **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
5. 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
6. 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
7. 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
8. **A.S. Biscoveanu**, *Characterizing gravitational-wave sources with likelihood reweighting*, Nat. Rev. Phys. 4, 5 (2022), DOI: 10.1038/s42254-021-00404-4
9. 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
10. **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
11. **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
12. **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
13. 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
14. 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
15. 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
16. **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

17. 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
18. **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
19. **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
20. G. Ashton et al., *Bilby: A user-friendly Bayesian inference library for gravitational-wave astronomy*, ApJS 241, 27 (2019), arXiv:1811.02042
21. 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
22. 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
23. 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

SCHOLARSHIPS AND AWARDS

Alan H. Barrett Prize Department of Physics award for exceptional research in astrophysics at MIT	2021
Ragnar and Margaret Naess Award MIT Music and Theater Arts award in recognition of creative accomplishments in music	2021
NSF Graduate Research Fellowship National fellowship for outstanding graduate students in STEM fields	2018–2023
MIT Emerson Scholarship To support private lessons for outstanding MIT student musicians	2020–2022
Paul And Daisy Soros Fellowship for New Americans National fellowship recognizing the top immigrants and children of immigrants pursuing graduate studies in the US	2018–2020
Monash University Faculty of Science Young Leader Award Recognized for my work to improve the climate for women in Physics and Astronomy at Monash	2018
Ford Foundation Fellowship Honorable Mention National fellowship aiming to increase the diversity of the nation's college and university faculty	2018
Fulbright Postgraduate Scholarship – Australia Fellowship designed to promote international relations through research and teaching exchange	2017–2018
APS LeRoy Apker Award for Undergraduate Research Finalist	2017
Student Marshal – Penn State Eberly College of Science	2017
Student Marshal – Penn State Department of Spanish, Italian, and Portuguese Honors the top graduating student in the college or department	2017

Channa and Usharani Reddy Mission Award	2017
Recognizes a graduating Schreyer Scholar who best exemplifies the honors college mission	
Barry Goldwater Scholarship Award	2016
Astronaut Scholarship Foundation Award	2016
National scholarships for undergraduate excellence in STEM	
John and Elizabeth Holmes Teas Scholarship in Physics	2016-2017
Bert Elsbach Honors Scholarship in Physics	2015-2016
Penn State Provost Award	2013-2015
Merit scholarships for top students in the Physics department and top incoming freshmen	
Penn State Evan Pugh Award	2016, 2017
Penn State President Sparks Award	2015
Penn State President's Freshman Award	2014
For students in the top 0.5% at Penn State	
NASA Space Grant for Women in Science and Engineering Research	2013-2014
Funding award for undergraduate research	

SCIENTIFIC PRESENTATIONS

- ◆ **UWM Center for Gravitation, Cosmology, and Astrophysics Seminar** (virtual) 2022
"Characterizing neutron star mergers and their electromagnetic counterparts using multimessenger observations"
- ◆ **IPAM Long Program Workshop III, Los Angeles, CA** 2021
Mathematical and Computational Challenges in the Era of GW Astronomy
"The Effect of Power Spectral Density Uncertainty on Gravitational-Wave Parameter Estimation"
- ◆ **Perimeter Institute Strong Gravity Seminar** (virtual) 2021
"The spins of binary black holes following LIGO and Virgo's third observing run"
- ◆ **IPAM Long Program Tutorial Workshop, Los Angeles, CA** (virtual) 2021
Mathematical and Computational Challenges in the Era of GW Astronomy
"Source characterization of individual compact binary coalescences using Bayesian inference"
- 14th Edoardo Amaldi Conference on Gravitational Waves** (virtual) 2021
"Measuring the spins of heavy binary black holes"
- European Astronomical Society Meeting, Leiden** (virtual) 2021
"The Multimessenger Discovery Potential of the Wide-Field Infrared Transient Explorer"
- ◆ **Gravitational Wave Astronomy Northwest Student Workshop**, (virtual) 2021
"An Introduction to Bayesian Parameter Estimation for Compact Binary Coalescences with BILBY"
- American Physical Society April Meeting**, (virtual) 2021
"Simultaneous Measurement of a Cosmological Stochastic Background and an Astrophysical Foreground"
- ◆ **MIT Kavli Institute Brown Bag Lunch Seminar, Cambridge, MA** (virtual) 2021
"Simultaneous Measurement of a Cosmological Stochastic Background and an Astrophysical Foreground"

237th Meeting of the American Astronomical Society (virtual)	2021
“A new spin on LIGO-Virgo binary black holes”	
◆ ICERM Workshop , Providence, RI (virtual)	2020
Statistical Methods for the Detection, Classification, and Inference of Relativistic Objects	
“Parameter estimation with BILBY”	
◆ Harvard Black Hole Initiative Colloquium , Cambridge, MA (virtual)	2020
“A new spin on LIGO-Virgo binary black holes”	
◆ Gravitational-Wave Open Data Workshop #3 , Silver Spring, MD (virtual)	2020
“An Introduction to Parameter Estimation for Compact Binary Coalescences”	
235th Meeting of the American Astronomical Society , Honolulu, HI	2020
“The Reliability of the Low-Latency Estimation of Binary Neutron Star Chirp Mass”	
American Physical Society April Meeting , Denver, CO	2019
“Constraining Short Gamma-Ray Burst Jet Properties Using Coincident Gravitational-Wave and Electromagnetic Detections”	
American Physical Society New England Section Meeting , Dartmouth, MA	2018
“Constraining the Jet Properties of Gamma-Ray Bursts with Multimessenger Astronomy”	
◆ TEDxFulbrightCanberra , Canberra, ACT	2018
“The Cosmic Gravitational-Wave Symphony”	
9th Australasian Conference for General Relativity and Gravitation , Gingin, WA	2017
“Constraining GRB Jet Properties Using Coincident GW/EM Detections”	
◆ Penn State Primordial Universe and Gravity Seminar , State College, PA	2017
“Stochastic Background Detection and Analysis Techniques”	
LIGO-Virgo Collaboration Meeting , Pasadena, CA	2017
“Stochastic Search for Non-GR Polarizations”	
Best Data Analysis Poster	
American Physical Society April Meeting , Salt Lake City, UT	2016
“Determining the Mass Composition of Cosmic Rays Using Shower Universality”	
Pierre Auger Collaboration Meeting , Malargüe, Argentina	2016
“Elongation Rate Using the El Universal Reconstruction”	
◆ University of Melbourne Astrophysics Colloquium , Melbourne, VIC	2015
“Correlated Magnetic Noise and the Search for a Stochastic Gravitational Wave Background”	
American Physical Society April Meeting , Baltimore, MD	2015
“Extending the Measurement of Shower Maximum to the Highest Energies Using Universality and Data from the Surface Detector of the Pierre Auger Observatory”	
American Physical Society Mid-Atlantic Section Meeting , State College, PA	2014
“Determining the Particle Identity of Ultra-High Energy Cosmic Rays”	

◆ indicates an invited talk

SERVICE AND OUTREACH

- Student Representative**, LIGO Academic Advisory Committee Sept. 2021–present
Advocate for early career scientists in the LIGO Collaboration through career development and social programming
- Referee**, ApJ, ApJL, Phys. Rev. Lett., Phys. Rev. D 2020–present
- Research Project Leader**, Warrior-Scholar Project July 2020, 2021
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 Sept. 2019–May 2021
Arrange and introduce weekly speakers to present on new papers and preprints to the MIT Kavli community
- Mentor**, Gravitational-Wave Open Data Workshop May 2020, 2021
Develop and lead a series of tutorials introducing gravitational-wave data analysis techniques using open data
- Undergraduate Research Mentor**, MIT LIGO Lab
Jonathan Davies, Imperial College London Summer 2019
Kaylee de Soto, MIT Summer 2020
Claire Williams, Carleton College Summer and Fall 2020
- Graduate Mentor**, MIT Women in Physics Mentorship Program Sept. 2018- June 2019
Provide advice and support to a female undergraduate physics student at MIT
- Music Director, Social Chair**, MIT Ribotones June 2019–present
Organize and perform in local outreach concerts at nursing homes and hospitals throughout the Boston area
- Founding Executive Board Member**, MIT MUSE Project Sept. 2020–Sept. 2021
Organize a virtual concert series highlighting the works of black musicians and composers