

Michael J. Zevin || Curriculum Vitae

University of Chicago/Enrico Fermi Institute — 5640 S Ellis Ave — Chicago, IL 60637

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NHFP postdoctoral fellow with research interests in gravitational waves, compact objects, and stellar evolution.

Education

Academic Qualifications

Northwestern University

Evanston, IL

Ph.D., September 2020

M.Sc., December 2016

Program: Physics and Astronomy

Certificates: Integrated Data Science

Thesis: Unveiling the Lives and Deaths of Stars through Compact Object Mergers

Advisor: Vicky Kalogera

University of Illinois

Champaign, IL

B.S., May 2012

Majors: Astronomy, Physics

Minor: Music Performance

Fellowships

- ▷ NASA Hubble Fellowship Program: Hubble Postdoctoral fellow 2020–present
- ▷ Zhengtong/Enrico Fermi Postdoctoral Fellow 2020–present
- ▷ KICP Postdoctoral Fellow 2020–present
- ▷ NSF IDEAS Fellowship 2016–2020
- ▷ Illinois Space Grant Consortium Fellowship 2017–2020
- ▷ NSF GK12 Fellowship 2017–2018
- ▷ Oxford Centre for Cosmological Studies Balzan Fellowship¹ 2018
- ▷ Kavli Summer Fellowship² 2017

Publications

all paper titles are hyperlinked to their ADS entries

First Author Papers

Observational Inference on the Delay Time Distribution of Short Gamma-ray Bursts

ApJL

[M. Zevin](#), A. Nugent, S. Adhikari, W.-f. Fong, D. Holz, L. Kelley

2022

The Astrophysical Journal Letters **940** L18

Citations: 5

Avoiding a Cluster Catastrophe: Retention Efficiency and the Binary Black Hole Mass Spectrum

ApJL

[M. Zevin](#), D. Holz

2022

The Astrophysical Journal Letters **935** L20

Citations: 9

¹Research Advisor: Dr. Chris Lintott (New College, University of Oxford)

²Research Advisor: Dr. Enrico Ramirez-Ruiz (University of California Santa Cruz)

- Suspicious Siblings: The Distribution of Mass and Spin Across Component Black Holes in Isolated Binary Evolution** ApJ
2022
M. Zevin, S. Bavera
The Astrophysical Journal **933**, 86
Citations: 23
- Implications of Eccentric Observations on Binary Black Hole Formation Channels** ApJL
2021
M. Zevin, I. Romero-Shaw, K. Kremer, E. Thrane, P. Lasky
The Astrophysical Journal Letters **921**, L43
Citations: 25
- One Channel to Rule Them All? Constraining the Origins of Binary Black Holes using Multiple Formation Pathways** ApJ
2021
M. Zevin, S. Bavera, C. Berry, V. Kalogera, T. Fragos, P. Marchant, C. Rodriguez, F. Antonini, D. Holz, C. Pankow
The Astrophysical Journal **910**, 152
Citations: 152
- Forward Modeling of Double Neutron Stars: Insights from Highly-Offset Short Gamma-ray Bursts** ApJ
2020
M. Zevin, L. Kelley, A. Nugent, W.-f. Fong, C. Berry, V. Kalogera
The Astrophysical Journal **904**, 190
Citations: 13
- Exploring the Lower Mass Gap and Unequal Mass Regime in Compact Binary Evolution** ApJL
2020
M. Zevin, M. Spera, C. Berry, V. Kalogera
The Astrophysical Journal Letters **899**, L1
Citations: 96
- You Can't Always Get What You Want: The Impact of Prior Assumptions on Interpreting GW190412** ApJL
2020
M. Zevin, C. Berry, S. Coughlin, K. Chatziioannou, S. Vitale
The Astrophysical Journal Letters **899**, L17
Citations: 48
- Can Neutron-Star Mergers Explain the r-process Enrichment in Globular Clusters?** ApJ
2019
M. Zevin, K. Kremer, D. M. Siegel, S. Coughlin, B. T.-H. Tsang, C. P. L. Berry, V. Kalogera
The Astrophysical Journal **886**, 1
Citations: 29
- Eccentric Black Hole Mergers in Dense Star Clusters: The Role of Binary-Binary Encounters** ApJ
2019
M. Zevin, J. Samsing, C. L. Rodriguez, C. J. Haster, E. Ramirez-Ruiz
The Astrophysical Journal **871**, 91
Citations: 146
– Covered by AAS Nova
- Constraining Formation Models of Binary Black Holes with Gravitational-Wave Observations** ApJ
2017
M. Zevin, C. Pankow, C. Rodriguez, L. Sampson, E. Chase, V. Kalogera, F. Rasio
The Astrophysical Journal **846**, 82
Citations: 131
- Gravity Spy: Integrating Advanced LIGO Detector Characterization, Machine Learning, and Citizen Science** CQG
2017
M. Zevin, S. Coughlin, S. Bahaadini, et al.
Classical and Quantum Gravity **34**, 064003
Citations: 144
– Covered by AAS Press

Highlighted Contributed Papers

- Things that might go bump in the night: Assessing structure in the binary black hole mass spectrum** 2022
A Farah, B. Edelman, M. Zevin, M. Fishbach, J. Ezquiaga, B. Farr, D. Holz
The Astrophysical Journal (submitted), arxiv:2301.00834

Inferring Interference: Identifying a Perturbing Tertiary with Eccentric Gravitational Wave Burst Timing	2022
<i>I. Romero-Shaw, N. Loutrel, M. Zevin</i>	
The Astrophysical Journal (submitted), arxiv:2211.07278	
The Missing Link Between Black Holes in High-Mass X-ray Binaries and Gravitational-Wave Sources: Observational Selection Effects	2022
<i>C. Liotine, M. Zevin, C. Berry, Z. Doctor, V. Kalogera</i>	
The Astrophysical Journal (accepted), arxiv:2210.01825	
Cosmologically coupled compact objects: a single parameter model for LIGO–Virgo mass and redshift distributions	ApJL 2021
<i>K. Croker, M. Zevin, D. Farrah, K. Nishimura, G. Tarle</i>	
The Astrophysical Journal Letters 922 , L22	
The Impact of Mass-Transfer Physics on the Observable Properties of Field Binary Black Hole Populations	A&A 2021
<i>S. Bavera, T. Fragos, M. Zevin, et al.</i>	
Astronomy & Astrophysics 647 , 153	
Approximations to the spin of close Black-hole–Wolf-Rayet binaries	RNAAS 2021
<i>S. Bavera, M. Zevin, T. Fragos</i>	
Research Notes of the American Astronomical Society 5 127	
COSMIC Variance in Binary Population Synthesis	ApJ 2019
<i>K. Breivik, S. Coughlin, M. Zevin, et al.</i>	
The Astrophysical Journal 898 , 71	
Black Holes: The Next Generation	PRD 2019
<i>C. Rodriguez, M. Zevin, P. Amaro-Seoane, S. Chatterjee, K. Kremer, F. A. Rasio, C. S. Ye</i>	
Physical Review D 100 , 043027	
Illuminating Black Hole Binary Formation Channels with Spins in Advanced LIGO	ApJL 2016
<i>C. Rodriguez, M. Zevin, C. Pankow, V. Kalogera, F. A. Rasio</i>	
The Astrophysical Journal Letters 832 , L2	
Contributed Papers	
Observational evidence for cosmological coupling of black holes and its implications for an astrophysical source of dark energy	ApJL 2023
<i>D. Farrah, K. Croker, M. Zevin, et al.</i>	
The Astrophysical Journal Letters 944 , L31	
A Preferential Growth Channel for Supermassive Black Holes in Elliptical Galaxies at $z \geq 2$	ApJ 2023
<i>D. Farrah, S. Petty, K. Croker, G. Tarlé, M. Zevin, et al.</i>	
The Astrophysical Journal 943 , 133	
Data quality up to the third observing run of Advanced LIGO: Gravity Spy glitch classifications	2022
<i>J. Glanzer, S. Banagiri, S. Coughlin, S. Soni, C. Berry, M. Zevin, et al.</i>	
Classical and Quantum Gravity (submitted), arXiv: 2208.12849	
Intermediate-mass Black Holes on the Run from Young Star Clusters	ApJ 2022
<i>E. Gonzalez, K. Kremer, G. Fragione, M. Martinez, N. Weatherford, M. Zevin, F. Rasio</i>	
The Astrophysical Journal 940 , 131	
Discriminative Dimensionality Reduction using Deep Neural Networks for Clustering of LIGO Data	2022
<i>S. Baahadini, Y. Wu, S. Coughlin, M. Zevin, A. Katsaggelos</i>	
IEEE Transactions on Neural Networks and Learning Systems (submitted), arXiv: 2205.13672	
Short GRB Host Galaxies II: A Legacy Sample of Redshifts, Stellar Population Properties, and Implications for their Neutron Star Merger Origins	ApJ 2022
<i>A. Nugent, W.-f. Fong, Y. Dong, J. Leja, E. Berger, M. Zevin, et al.</i>	
The Astrophysical Journal 935 , 126	

Black hole - black hole total merger mass and the origin of LIGO/Virgo sources <i>K. Belczynski, Z. Doctor, M. Zevin, A. Olejak, S. Banerjee, D. Chattopadhyay</i> The Astrophysical Journal 935 , 126	ApJ 2022
The χ_{eff}^z correlation of field binary black hole mergers and how 3G gravitational-wave detectors can constrain it <i>S.S. Bavera, M. Fishbach, M. Zevin, E. Zapartas, T. Fragos</i> Astronomy & Astrophysics 665 , A59	A&A 2022
POSDON: A General-Purpose Population Synthesis Code with Detailed Binary-Evolution Simulations <i>T. Fragos, J.J. Andrews, S.S. Bavera, . . . , M. Zevin</i> The Astrophysical Journal Supplements (submitted) arXiv: 2202.05892	2021
Stochastic gravitational-wave background as a tool to investigate multi-channel astrophysical and primordial black-hole mergers <i>S. Bavera, G. Franciolini, G. Cusin, A. Riotto, M. Zevin, T. Fragos</i> Astronomy & Astrophysics 660 , 26	A&A 2022
Probing the progenitors of spinning binary black-hole mergers with long gamma-ray bursts <i>S. Bavera, T. Fragos, E. Zapartas, E. Ramirez-Ruiz, P. Marchant, L. Kelley, M. Zevin, et al.</i> Astronomy & Astrophysics Letters 657 , L8	A&A 2022
Evidence for Hierarchical Black Hole Mergers in the Second LIGO–Virgo Gravitational-Wave Catalog <i>C. Kimball, C. Talbot, C. Berry, M. Zevin, E. Thrane, V. Kalogera, et al.</i> The Astrophysical Journal Letters 915 , L35	ApJL 2020
The Impact of Mass-Transfer Physics on the Observable Properties of Field Binary Black Hole Populations <i>S. Bavera, T. Fragos, M. Zevin, C. Berry, P. Marchant, J. Andrews, S. Coughlin, A. Dotter, et al.</i> Astronomy & Astrophysics 647 , 153	A&A 2021
Black hole genealogy: Identifying hierarchical mergers with gravitational waves <i>C. Kimball, C. Talbot, C. Berry, M. Carney, M. Zevin, E. Thrane, V. Kalogera</i> The Astrophysical Journal 900 , 177	ApJ 2020
Black Hole Mergers from Hierarchical Triples in Dense Star Clusters <i>M. Martinez, G. Fragione, K. Kremer, . . . , M. Zevin, S. Naoz, F. A. Rasio</i> The Astrophysical Journal 903 , 67	ApJ 2020
Teaching Citizen Scientists to Categorize Glitches using Machine Learning Guided Training <i>C. Jackson, C. Østerlund, K. Crowston, . . . , M. Zevin</i> Computers in Human Behavior 105 , 106198	CHB 2020
The Missing Link in Gravitational-Wave Astronomy: Discoveries waiting in the decihertz range <i>M. Arca Sedda, C. Berry, K. Jani, . . . , M. Zevin</i> Classical and Quantum Gravity 37 , 215011 (ESA's Voyage 2050 White Paper)	CQG 2020
Knowledge Tracing to Model Learning in Online Citizen Science Projects <i>K. Crowston, C. Østerlund, T. Lee, . . . , M. Zevin</i> IEEE Transactions on Learning Technologies 13 , 1	IEEE TLT 2019
Classifying the Unknown: Discovering Novel Gravitational-Wave Detector Glitches using Similarity Learning <i>S. Coughlin, S. Bahaadini, N. Rohani, M. Zevin, et al.</i> Physical Review D 99 , 082002	PRD 2019
Post-Newtonian Dynamics in Dense Star Clusters: Binary Black Holes in the LISA Band <i>K. Kremer, C. L. Rodriguez, . . . , M. Zevin</i> Physical Review D 99 , 063003	PRD 2019
Post-Newtonian Dynamics in Dense Star Clusters: Formation, Masses, and Merger Rates of Highly-Eccentric Black Hole Binaries <i>C. L. Rodriguez, P. Amaro-Seoane, S. Chatterjee, K. Kremer, F. A. Rasio, J. Samsing, C. S. Ye, M. Zevin</i> Physical Review D 98 , 123005	PRD 2018

DIRECT: Deep Discriminative Embedding for Clustering of LIGO Data <i>S. Bahaadini, V. Noroozi, N. Rohani, S. Coughlin, M. Zevin, V. Kalogera, A. K. Katsaggelos</i> 25th IEEE International Conference on Image Processing Proceedings	ICIP 2018
Machine Learning for Gravity Spy: Glitch Classification and Dataset <i>S. Bahaadini, V. Noroozi, N. Rohani, S. Coughlin, M. Zevin, J. R. Smith, V. Kalogera, A. K. Katsaggelos</i> Information Sciences Journal 444 , 172	ISJ 2018
Improvements in Gravitational-wave Sky Localization with Expanded Networks of Interferometers <i>C. Pankow, E. A. Chase, S. Coughlin, M. Zevin, V. Kalogera</i> The Astrophysical Journal Letters 854 , L25	ApJL 2018
Deep Multi-view Models for Glitch Classification <i>S. Bahaadini, N. Rohani, S. Coughlin, M. Zevin, V. Kalogera, A. K. Katsaggelos</i> IEEE International Conference on Acoustics, Speech, and Signal Processing Proceedings	ICASSP 2018
Incorporating Current Research into Formal Higher Education Settings using Astrobites <i>N. E. Sanders, S. Kohler, C. Faesi, A. Villar, M. Zevin</i> American Journal of Physics 85 , 741	AJP 2017
Astrophysical Prior Information and Gravitational-Wave Parameter Estimation <i>C. Pankow, L. Sampson, L. Perri, E. A. Chase, S. Coughlin, M. Zevin, V. Kalogera</i> The Astrophysical Journal 834 , 154	APJ 2017
Collaboration Papers as part of the LIGO Scientific Collaboration (2015–Present) only papers with significant contributions from M. Zevin are listed, click here for full list	
Search for intermediate-mass black hole binaries in the third observing run of Advanced LIGO and Advanced Virgo <i>Astronomy and Astrophysics</i> 659 , A84 – M. Zevin : Reviewer for high-mass injection set	A&A 2022
The population of merging compact binaries inferred using gravitational waves through GWTC-3 <i>Physical Review X</i> (submitted), arxiv:2111.03634 – M. Zevin : Astrophysical interpretation review lead, code reviewer for high-mass injection set	2021
GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Part of the Third Observing Run <i>Physical Review X</i> (submitted), arxiv:2111.03634 – M. Zevin : Parameter estimation section review lead	2021
Properties and Astrophysical Implications of the 150 M_{\odot} Binary Black Hole Merger GW190521 <i>The Astrophysical Journal Letters</i> 900 , L13 – M. Zevin : Astrophysical implications reviewer	ApJL 2020
GW190412: Observation of a Binary-Black-Hole Coalescence with Asymmetric Masses <i>Physical Review D</i> 102 , 043015 – M. Zevin : Paper-writing team, populations and astrophysical implications lead, education and public outreach liaison, science summary writer, science case study team	PRD 2020
GW190814: Gravitational Waves from the Coalescence of a 23 Solar Mass Black Hole with a 2.6 Solar Mass Compact Object <i>The Astrophysical Journal Letters</i> 896 , L44 – M. Zevin : Astrophysical implications reviewer	ApJL 2020
Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo <i>The Astrophysical Journal Letters</i> 882 , L24 – M. Zevin : Education and public outreach liaison, science summary writer	ApJL 2019
On the Progenitor of Binary Neutron Star Merger GW170817 <i>The Astrophysical Journal Letters</i> 850 , L40 – M. Zevin : Chair of paper-writing team, analysis lead	ApJL 2017

GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral	PRL
Physical Review Letters 119 , 161101	2017
– M. Zevin : Education and public outreach liaison	
Observation of Gravitational Waves from a Binary Black Hole Merger	PRL
Physical Review Letters 116 , 061102	2016
– M. Zevin : Ran exploratory parameter estimation	

Presentations

Invited Talks	
CITA Seminar	<i>Toronto, CA</i>
<i>Deciphering the Biography of Massive Stars: Compact Object Mergers as a Rosetta Stone</i>	November 2022
AAS HEAD Meeting	<i>Pittsburgh, PA</i>
<i>One Channel to Rule Them All? Deciphering the Formation Pathways of Compact Object Mergers</i>	March 2022
Caltech/MIT LIGO–GRITTS Seminar	<i>Virtual</i>
<i>Deciphering the Biography of Massive Stars: Compact Object Mergers as a Rosetta Stone</i>	June 2021
Fermi Lab Cosmic Physics Center Seminar	<i>Virtual</i>
<i>Deciphering the Biography of Massive Stars: Compact Object Mergers as a Rosetta Stone</i>	May 2021
Yale Astronomy Colloquium	<i>Virtual</i>
<i>Deciphering the Biography of Massive Stars: Compact Object Mergers as a Rosetta Stone</i>	April 2021
University of Chicago Astro Lunch Seminar	<i>Virtual</i>
<i>Unveiling the Lives and Deaths of Stars through Compact Object Mergers</i>	January 2021
Zooniverse Transient Workshop	<i>Virtual</i>
<i>Gravity Spy: Leveling Up & Training Volunteers using Machine Learning</i>	November 2020
Cosmic Explorer Panel	<i>Virtual</i>
<i>Binary Formation, panelist</i>	October 2020
Perimeter Institute Strong Gravity Seminar	<i>Waterloo, ON</i>
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	December 2019
AEI Seminar	<i>Postdam, DE</i>
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	December 2019
Caltech TAPIR Seminar	<i>Pasadena, CA</i>
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	November 2019
UCLA Lunch Talk	<i>Los Angeles, CA</i>
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	November 2019
UCSC FLASH Seminar	<i>Santa Cruz, CA</i>
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	November 2019
UCSB Astro Lunch	<i>Santa Barbara, CA</i>
<i>Deciphering the Landscape of Binary Black Hole Formation Channels</i>	November 2019
Colombia Astronomy Seminar	<i>New York, NY</i>
<i>Getting the boot: Lonely GRBs, enigmatic r-process, and the birth of neutron stars</i>	October 2019
MIT GRITTS Seminar	<i>Cambridge, MA</i>
<i>Unveiling the Lives and Deaths of Stars through Compact Object Mergers</i>	October 2019
CfA High Energy Astrophysics Seminar	<i>Cambridge, MA</i>
<i>Deciphering the Landscape of Binary Black Hole Formation Channels</i>	October 2019
CGCA Seminar	<i>Milwaukee, WI</i>
<i>Unveiling the Lives and Deaths of Stars through Compact Object Mergers</i>	March 2019

IGC Seminar <i>From the Detected to the Detectors: Using Gravitational Waves to Enable Insights from the Stellar Graveyard & the Next Generation of Citizen Science</i>	Portsmouth, UK March 2018
SPI-MAX Seminar <i>From the Detected to the Detectors: Using Gravitational Waves to Enable Insights from the Stellar Graveyard & the Next Generation of Citizen Science</i>	Oxford, UK February 2018
Contributed Talks & Posters	
NHFP Symposium (Talk) <i>Lessons learned from the galactic hosts of short gamma-ray bursts</i>	Baltimore, MD September 2022
Post-PAX Meeting (Talk) <i>Formation Channels of Binary Black Holes: Open Questions</i>	Cambridge, MA August 2022
Intermediate-Mass Black Holes: New Science from Stellar Evolution to Cosmology (Talk) <i>The growth of intermediate-mass black holes through hierarchical mergers: implications for ground-based gravitational-wave detections</i>	San Juan, PR April 2022
APS April Meeting (Talk) <i>Lessons learned from the galactic hosts of short gamma-ray bursts</i>	New York, NY April 2022
Aspen Winter Conference (Talk) <i>Growing Black Holes: The Impact of Retention Efficiency on Hierarchical Mergers and the BBH Mass Spectrum</i>	Aspen, CO January 2022
NHFP Symposium (Talk) <i>Constraining dynamical formation channels of binary black holes with eccentric observations</i>	Virtual September 2021
Amaldi 14 (Talk) <i>Constraining dynamical formation channels of binary black holes with eccentric observations</i>	Virtual July 2021
NHFP Symposium (Talk) <i>Research Overview</i>	Virtual September 2020
Aspen Winter Conference (Talk) <i>Eccentric Black Hole Mergers in Dense Star Clusters: Post-Newtonian Effects & Higher Multiplicity Encounters</i>	Aspen, CO February 2019
AAS 233 (Talk) <i>Eccentric Black Hole Mergers in Dense Star Clusters: The Role of Binary-Binary Encounters</i>	Seattle, WA January 2019
NSF Research Traineeship Annual Meeting (Poster) <i>Gravity Spy: Integrating Gravitational-Wave Astrophysics, Machine Learning, and Citizen Sciences</i>	Washington, DC September 2018
MODEST-18 (Talk) <i>The Role of Binary-Binary Interactions in Inducing Eccentric Black Hole Mergers</i>	Santorini, Greece June 2018
APS April Meeting (Talk) <i>On the Progenitor of Binary Neutron Star Merger GW170817</i>	Columbus, OH April 2018
Detecting the Unexpected: Discovery in the Era of Astronomically Big Data (Talk) <i>The Future of Citizen Science: Coupling Crowdsourcing and Machine Learning</i>	Baltimore, MD March 2017
APS April Meeting (Talk) <i>Discriminating Formation Channels of Binary Black Hole Systems with Advanced LIGO</i>	Washington, DC January 2017
AAS 229 (Talk) <i>Discriminating Formation Channels of Binary Black Hole Systems with Advanced LIGO</i>	Grapevine, TX January 2017
AAS 229 (Workshop & Poster) <i>Astrobites: Engaging Undergraduate Science Majors with Current Astrophysical Research</i>	Grapevine, TX January 2017
AAS 228 (Talk) <i>Gravity Spy: Integrating aLIGO detector characterization, machine learning, and citizen science</i>	San Diego, CA June 2016

Northwestern Computational Research Exposition (Poster)

Evanston, IL

Integrating aLIGO detector characterization, machine learning, and citizen science

April 2016

- Awarded first prize in poster competition

Midwest Relativity Meeting (Talk)

Evanston, IL

LIGO glitch classification through the combination of machine learning and citizen science

September 2015

Outreach & Public Engagement**Science Communication & Outreach****Gravity Spy****Citizen Science***Researcher, Developer*

2015–Present

- Developed Zooniverse citizen science project to classify and characterize LIGO–Virgo detector data, as part of a team of gravitational wave, machine learning, Zooniverse, and social scientists
- Led construction of user interface on the Zooniverse Lab platform, point person for communication between the Zooniverse volunteers and science team
- Project has accumulated over 7,000,000 classifications from over 30,000 registered users (January 2022)

Lifelong Learning**Talk Series***Organizer*

2021–2022

- Public talk series for seniors, based in public libraries and senior centers in the Chicago-land area.

Astrobiters**Blog***Author, Administrator, & Leadership Team*

2014–2020

- Astronomy blog partnered with the AAS, provides daily summaries of recent astronomy research articles
- Initiated the “Beyond” series, which covers topics on career advice, graduate school applications, and diversity, equity, and inclusivity in astronomy

ComSciCon**Workshop***Organizer, Attendee*

2017–2020

- National graduate-student run science communication workshop for graduate students in STEM fields

Astronomy on Tap**Public Event***Co-founder, organizer, host, speaker*

2015–2020

- Co-founded the Chicago branch of Astronomy on Tap, which hosts astronomy talks and space-based trivia at bars and breweries in the Chicago-land area

Rapid Fire Research**Departmental Event***Founder, Chair*

2016–2019

- Annual research presentation event for graduate and undergraduate students in Northwestern Department of Physics and Astronomy

Machine Learning Meetups**Public Event***Organizer, Host*

2016–2018

- Quarterly interdisciplinary colloquia on data science and machine learning topics

Chicagoland Science Penpals**Event***Participant*

2017

- Correspondence with students in Chicago public schools about scientific research and science as a profession, using handwritten letters

Public Talks & Lectures**Astronomer Conversations****Lecture Series***Adler Planetarium, Space Visualization Laboratory*

2014–present

- Public presentations at the Adler Planetarium for museum guests

Lifelong Learning: JWST**Lecture Series***Remote*

November 2022

Art of Science <i>Chicago, IL</i>	Invited Speaker <i>October 2022</i>
Hinsdale Social Studies Circle: Uncovering the Universe's Symphony <i>Virtual</i>	Invited Speaker <i>January 2022</i>
Finding Genius Podcast <i>Virtual</i>	Invited Speaker <i>December 2021</i>
Lifelong Learning: Gravitational Waves <i>Remote</i>	Lecture Series <i>November 2021</i>
Lifelong Learning: Gravitational Waves <i>Remote</i>	Lecture Series <i>March 2021</i>
UBS Investment Banking: Gravity Spy and LIGO <i>Virtual</i>	Invited Speaker <i>September 2020</i>
Astronomer Evenings <i>Northwestern University, Dearborn Observatory</i> – Presentations during public observing hours at the Dearborn Observatory	Lecture Series <i>2016–2019</i>
Chipping Norton Amateur Astronomy Group <i>Chipping Norton, UK</i>	Keynote Lecture <i>February 2018</i>
Take Our Children to Work Day <i>Northwestern University</i>	Lecture <i>April 2016, 2018</i>
Haven Midde School <i>Evanston, IL</i>	Invited Speaker <i>April 2017, 2018</i>
Chicago Astronomical Society <i>Adler Planetarium</i>	Keynote Lecture <i>May 2017</i>
Avery Coonley School <i>Downers Grove, IL</i>	Invited Speaker <i>May 2017</i>
Seven Minutes of Science: An Interdisciplinary Symposium <i>Northwestern University</i>	Public Talk <i>April 2017</i>
Highcrest Elementary <i>Wilmette, IL</i>	Invited Speaker <i>March 2017</i>
Einstein Evenings <i>Northwestern University, Dearborn Observatory</i> – Monthly presentations during observing hours on LIGO discoveries in celebration of the 100th anniversary of General Relativity	Lecture Series <i>2015–2016</i>
Nettlehorst Elementary <i>Chicago, IL</i>	Invited Speaker <i>February 2016</i>
Publications	
Astrobitess <i>Authored over 20 blog posts on current research in astrophysics (Link)</i>	Blog <i>2014–2020</i>
LIGO Science Summary <i>Companion science summary to the LIGO–Virgo O2 Populations paper (Link)</i> <i>Companion science summary to the GW170817 Detection paper (Link)</i>	Article <i>November 2018</i> <i>October 2017</i>
LIGO Magazine <i>The Gravity Spy Project — Machine Learning and Citizen Science (Link)</i>	Magazine Article <i>March 2017</i>
Helix Magazine <i>The Legacy of Scientific Discovery (Link)</i>	Magazine Article <i>March 2017</i>

Teaching & Work Experience

University of Chicago <i>Graduate Level Stellar Astrophysics, Graduate Level Space Physics</i>	Guest Lecturer 2022–Present
Northwestern University <i>Introduction to Astronomy, Stellar Astrophysics, Data-Driven Research in Astronomy</i> – Guest lectured, developed assignments, graded, and ran telescope observing sessions	Lecturer/TA 2015–2017
GK12 Fellowship <i>Reach for the Stars; Evanston, IL</i> – Co-taught astronomy classes at Evanston Township High School – Developed curriculum, coding-based lessons, and visualizations for high-school students	Teaching 2017–2018
Kids Science Labs <i>Lead Teacher; Chicago, IL</i> – Taught classes of 3–12 year old students in hands-on, experiential science classes – Designed curriculum for science summer camps	Teaching 2013–2015
Adler Planetarium <i>Mission Specialist, Science Leadership Corps Instructor; Chicago, IL</i> – Facilitated exhibits, performed experiments, and gave astronomy talks to the public – Designed educational programming – Led under-represented students in designing experiments for high-altitude balloon launches	Museum Education 2012–2014
Students Mentored	
April Cheng <i>Multi-channel model selection with GWTC-3; MIT Undergraduate Student</i>	Undergraduate 2022–present
Aditya Vijaykumar <i>Evolution of binary neutron stars in cosmological simulations; KICP Visiting Graduate Student</i>	Graduate 2022–present
Anya Nugent <i>Host demographics and progenitors of short GRBs; CIERA Graduate Student</i>	Graduate 2021–present
Amanda Farah <i>Cosmology from evolving non-parametric mass distribution; University of Chicago Graduate Student</i>	Graduate 2021–present
Camille Liotine <i>HMXB Progenitors to Binary Black Hole Mergers; CIERA Graduate Student</i>	Graduate 2020–present
Simone Bavera <i>Isolated Evolution and Tidal Spin-up of Wolf-Rayet Stars; University of Geneva Graduate Student</i>	Graduate 2019–2021
Michael Kurkowski <i>Pair Instability Supernova Prescriptions in Binary Population Synthesis; CIERA REU Student</i>	Undergraduate 2019
Jared Machtinger <i>Population properties of binary black holes detected by LIGO; CIERA Summer Student</i>	High School 2019
Danai Avdela <i>Population properties of binary black holes detected by LIGO; CIERA Summer Student</i>	High School 2019
Isaac Rivera <i>Offset distributions of short gamma-ray bursts; CIERA REU Student</i>	Undergraduate 2018
Grace Kern <i>Optimization of Gravity Spy image retirement; CIERA Summer Student</i>	High School 2018
Hannah Stein <i>Optimization of Gravity Spy image retirement; CIERA Summer Student</i>	High School 2018
Yuqi Yun <i>Gaussian Process regression of black hole mass distributions; CIERA REU Student</i>	Undergraduate 2016

Awards & Honors

- ▷ Avery Coonley School, Graduate Keynote Speaker June 2018
- ▷ American Astronomical Society, Media Intern June 2016
- ▷ Breakthrough Prize in Fundamental Physics (*as part of the LIGO-Virgo Collaboration*) May 2016
- ▷ Gruber Cosmology Prize (*as part of the LIGO-Virgo Collaboration*) May 2016
- ▷ National Science Foundation Graduate Research Fellowship (*honorable mention*) April 2016
- ▷ First Place, Poster Competition (*Computational Research Day, Northwestern University*) April 2016
- ▷ High Distinction in Physics (*University of Illinois Urbana-Champaign*) May 2012

Affiliations & Leadership Positions

- ▷ NHFP DEI Working Group: Statistics Co-Lead 2020–present
- ▷ GWPAW Conference: Scientific Organizing Committee 2022
- ▷ NHFP Symposium: Scientific Organizing Committee 2022
- ▷ Lifelong Learning: Organizer 2021–2022
- ▷ Astrobites: Administrator, Author 2014–2020
- ▷ ComSciCon National: Organizer 2017–2020
- ▷ LIGO Scientific Collaboration: Member 2015–Present
- ▷ American Astronomical Society: Junior Member 2016–Present
- ▷ American Physical Society: Member 2016–Present
- ▷ CIERA Compact Objects Coffee: Founder, chair 2018–2020
- ▷ Chicago Metropolitan Symphony Orchestra: Double Bassist 2014–Present
- ▷ Physics and Astronomy Graduate Student Council: Quality of Life Chair 2016–2018
- ▷ Rapid Fire Research: Founder, chair 2016–2018

Service Work

Served on NSF panel 2021

Peer Reviewer for: 2017–Present

- *Astronomy and Astrophysics*
- *The Astrophysical Journal*
- *The Astrophysical Journal Letters*
- *Monthly Notices of the Royal Astronomical Society*
- *Nature Astronomy*
- *Physical Review D*
- *Physical Review Letters*