

Michael J. Zevin || Curriculum Vitae

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

☎ 630.915.5870 • ✉ michael.j.zevin@gmail.com • 🌐 michaelzevin.github.io

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

Education

Academic Qualifications

Northwestern University

Evanston, IL

Program: Physics and Astronomy

Certificates: Integrated Data Science

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

Advisor: Vicky Kalogera

Ph.D., August 2020

M.Sc., December 2016

University of Illinois

Champaign, IL

Majors: Astronomy, Physics

Minor: Music Performance

B.S., May 2012

Fellowships

- ▷ NASA Hubble Fellowship Program: Hubble postdoctoral fellow 2020–present
- ▷ Enrico Fermi Postdoctoral Fellow expected: 2023
- ▷ 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

First Author & Chaired Papers (with links)

One Channel to Rule Them All? Constraining the Origins of Binary Black Holes using Multiple Formation Pathways

ApJL

2020

[M. Zevin](#), S. Bavera, C. Berry, V. Kalogera, T. Fragos, P. Marchant, C. Rodriguez, F. Antonini, D. Holz, C. Pankow
The Astrophysical Journal Letters (submitted)

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

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

Forward Modeling of Double Neutron Stars: Insights from Highly-Offset Short Gamma-ray Bursts

ApJ

2019

[M. Zevin](#), L. Kelley, A. Nugent, W. Fong, C. Berry, V. Kalogera

The Astrophysical Journal (in press)

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

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

arXiv: 1910.03598

- 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
- 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
– Covered by AAS Nova
- On the Progenitor of Binary Neutron Star Merger GW170817** ApJL
2017
The LIGO Scientific Collaboration and Virgo Collaboration³
The Astrophysical Journal Letters **850**, L40
- 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
- Gravity Spy: Integrating Advanced LIGO Detector Characterization, Machine Learning, and Citizen Science** CQG
2017
[M. Zevin](#), S. Coughlin, S. Bahaadini, E. Besler, N. Rohani, S. Allen, M. Cabero, K. Crowston, A. Katsaggelos, S. Larson, T. Lee, C. Lintott, T. Littenberg, A. Lundgren, C. Østerlund, J. Smith, L. Trouille, V. Kalogera
Classical and Quantum Gravity **34**, 064003
– Covered by AAS Press

Highlighted Contributed Papers

- GW190412: Observation of a Binary-Black-Hole Coalescence with Asymmetric Masses** PRD
2020
The LIGO Scientific Collaboration and Virgo Collaboration⁴
Physical Review D **102**, 043015
- COSMIC: Open-Source Binary Population Synthesis** ApJ
2019
K. Breivik, S. Coughlin, [M. Zevin](#), C. Rodriguez, K. Kremer, C. Ye, J. Andrews, M. Kurkowski, M. Digman, S. Larson, F. Rasio
The Astrophysical Journal **898**, 71
- Black Holes: The Next Generation** PRD
2019
C. Rodriguez, [M. Zevin](#), P. Amaro-Seoane, S. Chatterjee, K. Kremer, F. A. Rasio, C. S. Ye
Physical Review D **100**, 043027
- Illuminating Black Hole Binary Formation Channels with Spins in Advanced LIGO** ApJL
2016
C. Rodriguez, [M. Zevin](#), C. Pankow, V. Kalogera, F. A. Rasio
The Astrophysical Journal Letters **832**, L2

Contributed Papers (with links)

- Evidence for Hierarchical Black Hole Mergers in the Second LIGO–Virgo Gravitational-Wave Catalog** 2020
C. Kimball, C. Talbot, C. Berry, [M. Zevin](#), E. Thrane, V. Kalogera, R. Buscicchio, M. Carney, T. Dent, H. Middleton, E. Payne, J. Veitch, D. Williams
The Astrophysical Journal Letters (submitted)
arXiv: 2011.05332
- The Impact of Mass-Transfer Physics on the Observable Properties of Field Binary Black Hole Populations** 2020
S. Bavera, T. Fragos, [M. Zevin](#), C. Berry, P. Marchant, J. Andrews, S. Coughlin, A. Dotter, K. Kovlakas, D. Misra, J. Serra-Perez, Y. Qin, K. Rocha, J. Romn-Garza, N. Tran, E. Zapartas
Monthly Notices of the Royal Astronomical Society (submitted)
arXiv: 2010.16333
- Black hole genealogy: Identifying hierarchical mergers with gravitational waves**

³[M. Zevin](#): Chair of paper-writing team and analysis lead

⁴[M. Zevin](#): Paper-writing team, populations and astrophysical implications lead

C. Kimball, C. Talbot, C. Berry, M. Carney, M. Zevin , E. Thrane, V. Kalogera <i>The Astrophysical Journal</i> (submitted) arXiv: 1911.00903	2020
Teaching Citizen Scientists to Categorize Glitches using Machine Learning Guided Training C. Jackson, C. Østerlund, K. Crowston, M. Harandi, S. Allen, S. Bahaadini, S. Coughlin, V. Kalogera, A. Katsaggelos, S. Larson, N. Rohani, J. Smith, L. Trouille, M. Zevin <i>Computers in Human Behavior</i> (accepted)	CHB 2019
The Missing Link in Gravitational-Wave Astronomy: Discoveries waiting in the decihertz range M. Arca Sedda, C. Berry, K. Jani, P. Amaro-Seoane, P. Auclair, J. Baird, T. Baker, E. Berti, K. Breivik, C. Caprini, X. Chen, D. Doneva, J. Ezquiaga, S. Ford, M. Katz, S. Kolkowitz, B. McKernan, G. Mueller, G. Nardini, I. Pikowski, S. Rajendran, A. Sesana, L. Shao, N. Tamanini, N. Warburton, H. Witek, K. Wong, M. Zevin ESA's Voyage 2050 White Paper	ESA WP 2019
Knowledge Tracing to Model Learning in Online Citizen Science Projects K. Crowston, C. Østerlund, T. Lee, C. Jackson, M. Harandi, S. Allen, S. Bahaadini, S. Coughlin, A. Katsaggelos, S. Larson, N. Rohani, J. Smith, L. Trouille, M. Zevin <i>IEEE Transactions on Learning Technologies</i> (accepted)	IEEE TLT 2019
Classifying the Unknown: Discovering Novel Gravitational-Wave Detector Glitches using Similarity Learning S. Coughlin, S. Bahaadini, N. Rohani, M. Zevin , O. Patane, M. Harandi, C. Jackson, V. Noroozi, S. Allen, J. Areeda, M. Coughlin, P. Ruiz, C. P. L. Berry, K. Crowston, A. K. Katsaggelos, A. Lundgren, C. Østerlund, J. R. Smith, L. Trouille, V. Kalogera <i>Physical Review D</i> 99 , 082002	PRD 2019
Post-Newtonian Dynamics in Dense Star Clusters: Binary Black Holes in the LISA Band K. Kremer, C. L. Rodriguez, P. Amaro-Seoane, K. Breivik, S. Chatterjee, M. L. Katz, S. Larson, F. A. Rasio, J. Samsing, C. S. Ye, M. Zevin <i>Physical Review D</i> 99 , 063003	PRD 2019
Post-Newtonian Dynamics in Dense Star Clusters: Formation, Masses, and Merger Rates of Highly-Eccentric Black Hole Binaries C. L. Rodriguez, P. Amaro-Seoane, S. Chatterjee, K. Kremer, F. A. Rasio, J. Samsing, C. S. Ye, M. Zevin <i>Physical Review D</i> 98 , 123005	PRD 2018
DIRECT: Deep Discriminative Embedding for Clustering of LIGO Data S. Bahaadini, V. Noroozi, N. Rohani, S. Coughlin, M. Zevin , V. Kalogera, A. K. Katsaggelos 25th IEEE International Conference on Image Processing Proceedings	ICIP 2018
Machine Learning for Gravity Spy: Glitch Classification and Dataset S. Bahaadini, V. Noroozi, N. Rohani, S. Coughlin, M. Zevin , J. R. Smith, V. Kalogera, A. K. Katsaggelos <i>Information Sciences Journal</i> 444 , 172	ISJ 2018
Improvements in Gravitational-wave Sky Localization with Expanded Networks of Interferometers C. Pankow, E. A. Chase, S. Coughlin, M. Zevin , V. Kalogera <i>The Astrophysical Journal Letters</i> 854 , L25	ApJL 2018
Deep Multi-view Models for Glitch Classification S. Bahaadini, N. Rohani, S. Coughlin, M. Zevin , V. Kalogera, A. K. Katsaggelos <i>IEEE International Conference on Acoustics, Speech, and Signal Processing Proceedings</i>	ICASSP 2018
Incorporating Current Research into Formal Higher Education Settings using Astrobites N. E. Sanders, S. Kohler, C. Faesi, A. Villar, M. Zevin <i>American Journal of Physics</i> 85 , 741	AJP 2017
Astrophysical Prior Information and Gravitational-Wave Parameter Estimation C. Pankow, L. Sampson, L. Perri, E. A. Chase, S. Coughlin, M. Zevin , V. Kalogera <i>The Astrophysical Journal</i> 834 , 154	APJ 2017

Collaboration Papers (as part of the LIGO Scientific Collaboration, 2015–Present)

- Search for Gravitational Waves Associated with Gamma-Ray Bursts Detected by Fermi and Swift During the LIGO-Virgo Run O3a
- Population Properties of Compact Objects from the Second LIGO-Virgo Gravitational-Wave Transient Catalog
- Tests of General Relativity with Binary Black Holes from the second LIGO-Virgo Gravitational-Wave Transient Catalog
- GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run
- Gravitational-wave Constraints on the Equatorial Ellipticity of Millisecond Pulsars
- GW190521: A Binary Black Hole Merger with a Total Mass of $150 M_{\odot}$
- Prospects for observing and localizing gravitational-wave transients with Advanced LIGO, Advanced Virgo and KAGRA
- Properties and Astrophysical Implications of the $150 M$ Binary Black Hole Merger GW190521
- GW190814: Gravitational Waves from the Coalescence of a 23 Solar Mass Black Hole with a 2.6 Solar Mass Compact Object
- Optically targeted search for gravitational waves emitted by core-collapse supernovae during the first and second observing runs of advanced LIGO and advanced Virgo
- GW190412: Observation of a binary-black-hole coalescence with asymmetric masses⁵
- A Joint Fermi-GBM and LIGO/Virgo Analysis of Compact Binary Mergers from the First and Second Gravitational-wave Observing Runs
- A guide to LIGO-Virgo detector noise and extraction of transient gravitational-wave signals
- Model comparison from LIGO-Virgo data on GW170817's binary components and consequences for the merger remnant
- Search for gravitational waves from Scorpius X-1 in the second Advanced LIGO observing run with an improved hidden Markov model
- Open data from the first and second observing runs of Advanced LIGO and Advanced Virgo
- Tests of general relativity with the binary black hole signals from the LIGO-Virgo catalog GWTC-1
- Search for Gravitational-wave Signals Associated with Gamma-Ray Bursts during the Second Observing Run of Advanced LIGO and Advanced Virgo
- Search for Substellar Mass Ultracompact Binaries in Advanced LIGO's Second Observing Run
- Search for Eccentric Binary Black Hole Mergers with Advanced LIGO and Advanced Virgo during Their First and Second Observing Runs
- Search for intermediate mass black hole binaries in the first and second observing runs of the Advanced LIGO and Virgo network⁶
- Directional limits on persistent gravitational waves using data from Advanced LIGO's first two observing runs
- Search for the isotropic stochastic background using data from Advanced LIGO's second observing run
- Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo⁷
- A gravitational-wave measurement of the Hubble constant following the second observing run of Advanced LIGO and Virgo
- GWTC-1: A Gravitational-Wave Transient Catalog of Compact Binary Mergers Observed by LIGO and Virgo during the First and Second Observing Runs
- Tests of General Relativity with GW170817
- All-sky search for short gravitational-wave bursts in the second Advanced LIGO and Advanced Virgo run
- All-sky search for continuous gravitational waves from isolated neutron stars using Advanced LIGO O2 data
- Searches for Gravitational Waves from Known Pulsars at Two Harmonics in 2015–2017 LIGO Data
- Narrow-band search for gravitational waves from known pulsars using the second LIGO observing run
- All-sky search for long-duration gravitational-wave transients in the second Advanced LIGO observing run
- First Measurement of the Hubble Constant from a Dark Standard Siren using the Dark Energy Survey Galaxies and the LIGO/Virgo Binary-Black-hole Merger GW170814
- Low-latency Gravitational-wave Alerts for Multimessenger Astronomy during the Second Advanced LIGO and Virgo Observing Run
- Search for Gravitational Waves from a Long-lived Remnant of the Binary Neutron Star Merger GW170817

⁵M. Zevin: Paper-writing team, populations and astrophysical implications lead, education and public outreach liaison

⁶M. Zevin: Parameter estimation lead for highest-significance IMBH trigger

⁷M. Zevin: Education and public outreach liaison

- Searches for Continuous Gravitational Waves from 15 Supernova Remnants and Fomalhaut b with Advanced LIGO
- Search for Transient Gravitational-wave Signals Associated with Magnetar Bursts during Advanced LIGO's Second Observing Run
- Constraining the p-Mode–g-Mode Tidal Instability with GW170817
- Properties of the Binary Neutron Star Merger GW170817
- A Fermi Gamma-Ray Burst Monitor Search for Electromagnetic Signals Coincident with Gravitational-wave Candidates in Advanced LIGO's First Observing Run
- Search for Multimessenger Sources of Gravitational Waves and High-energy Neutrinos with Advanced LIGO during Its First Observing Run, ANTARES, and IceCube
- Search for Subsolar-Mass Ultracompact Binaries in Advanced LIGO's First Observing Run
- GW170817: Measurements of Neutron Star Radii and Equation of State
- Search for Tensor, Vector, and Scalar Polarizations in the Stochastic Gravitational-Wave Background
- Full band all-sky search for periodic gravitational waves in the O1 LIGO data
- Constraints on cosmic strings using data from the first Advanced LIGO observing run
- Prospects for observing and localizing gravitational-wave transients with Advanced LIGO, Advanced Virgo and KAGRA
- GW170817: Implications for the Stochastic Gravitational-Wave Background from Compact Binary Coalescences
- Effects of data quality vetoes on a search for compact binary coalescences in Advanced LIGO's first observing run
- All-sky search for long-duration gravitational wave transients in the first Advanced LIGO observing run
- First Search for Nontensorial Gravitational Waves from Known Pulsars
- First narrow-band search for continuous gravitational waves from known pulsars in advanced detector data
- First low-frequency Einstein@Home all-sky search for continuous gravitational waves in Advanced LIGO data
- GW170608: Observation of a 19 Solar-mass Binary Black Hole Coalescence
- Search for Post-merger Gravitational Waves from the Remnant of the Binary Neutron Star Merger GW170817
- Estimating the Contribution of Dynamical Ejecta in the Kilonova Associated with GW170817
- Search for High-energy Neutrinos from Binary Neutron Star Merger GW170817 with ANTARES, IceCube, and the Pierre Auger Observatory
- On the Progenitor of Binary Neutron Star Merger GW170817⁸
- A gravitational-wave standard siren measurement of the Hubble constant
- Gravitational Waves and Gamma-Rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A
- Multi-messenger Observations of a Binary Neutron Star Merger
- GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral⁹
- GW170814: A Three-Detector Observation of Gravitational Waves from a Binary Black Hole Coalescence
- All-sky search for periodic gravitational waves in the O1 LIGO data
- Upper Limits on Gravitational Waves from Scorpius X-1 from a Model-based Cross-correlation Search in Advanced LIGO Data
- Search for high-energy neutrinos from gravitational wave event GW151226 and candidate LVT151012 with ANTARES and IceCube
- Search for intermediate mass black hole binaries in the first observing run of Advanced LIGO
- GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2
- Search for gravitational waves from Scorpius X-1 in the first Advanced LIGO observing run with a hidden Markov model
- Search for Gravitational Waves Associated with Gamma-Ray Bursts during the First Advanced LIGO Observing Run and Implications for the Origin of GRB 150906B
- Effects of waveform model systematics on the interpretation of GW150914
- Search for continuous gravitational waves from neutron stars in globular cluster NGC 6544
- First Search for Gravitational Waves from Known Pulsars with Advanced LIGO
- Directional Limits on Persistent Gravitational Waves from Advanced LIGO's First Observing Run
- Upper Limits on the Stochastic Gravitational-Wave Background from Advanced LIGO's First Observing Run
- Calibration of the Advanced LIGO detectors for the discovery of the binary black-hole merger GW150914
- All-sky search for short gravitational-wave bursts in the first Advanced LIGO run
- Exploring the sensitivity of next generation gravitational wave detectors
- The basic physics of the binary black hole merger GW150914
- Supplement: The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914 (2016, ApJL, 833, L1)

⁸M. Zevin: Paper-writing chair and analysis lead

⁹M. Zevin: Education and public outreach liaison

- The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914
- Upper Limits on the Rates of Binary Neutron Star and Neutron Star-Black Hole Mergers from Advanced LIGOs First Observing Run
- Results of the deepest all-sky survey for continuous gravitational waves on LIGO S6 data running on the Einstein@Home volunteer distributed computing project
- First targeted search for gravitational-wave bursts from core-collapse supernovae in data of first-generation laser interferometer detectors
- Binary Black Hole Mergers in the First Advanced LIGO Observing Run
- Improved Analysis of GW150914 Using a Fully Spin-Precessing Waveform Model
- Directly comparing GW150914 with numerical solutions of Einstein’s equations for binary black hole coalescence
- Comprehensive all-sky search for periodic gravitational waves in the sixth science run LIGO data
- Characterization of transient noise in Advanced LIGO relevant to gravitational wave signal GW150914
- Supplement: Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914 (2016, ApJL, 826, L13)
- Localization and Broadband Follow-up of the Gravitational-wave Transient GW150914
- GW151226: Observation of Gravitational Waves from a 22-Solar-Mass Binary Black Hole Coalescence
- Properties of the Binary Black Hole Merger GW150914
- Tests of General Relativity with GW150914
- High-energy neutrino follow-up search of gravitational wave event GW150914 with ANTARES and IceCube
- Search for transient gravitational waves in coincidence with short-duration radio transients during 2007-2013
- Observing gravitational-wave transient GW150914 with minimal assumptions
- GW150914: First results from the search for binary black hole coalescence with Advanced LIGO
- GW150914: The Advanced LIGO Detectors in the Era of First Discoveries
- GW150914: Implications for the Stochastic Gravitational-Wave Background from Binary Black Holes
- All-sky search for long-duration gravitational wave transients with initial LIGO
- Astrophysical Implications of the Binary Black-hole Merger GW150914
- Observation of Gravitational Waves from a Binary Black Hole Merger
- Prospects for Observing and Localizing Gravitational-Wave Transients with Advanced LIGO and Advanced Virgo

Presentations

Invited Talks

Zooniverse Transient Workshop	Virtual
<i>Gravity Spy: Leveling Up & Training Volunteers using Machine Learning</i>	November 2020
CE Explorer Panel	Virtual
<i>Binary Formation, panelist</i>	October 2020
Perimeter Institute Strong Gravity Seminar	Waterloo, ON
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	December 2019
AEI Seminar	Postdam, DE
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	December 2019
Caltech TAPIR Seminar	Pasadena, CA
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	November 2019
UCLA Lunch Talk	Los Angeles, CA
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	November 2019
UCSC FLASH Seminar	Santa Cruz, CA
<i>Deciphering the Landscape of Compact Binary Formation Channels</i>	November 2019
UCSB Astro Lunch	Santa Barbara, CA
<i>Deciphering the Landscape of Binary Black Hole Formation Channels</i>	November 2019
Colombia Astronomy Seminar	New York, NY
<i>Getting the boot: Lonely GRBs, enigmatic r-process, and the birth of neutron stars</i>	October 2019
MIT GRITTS Seminar	Cambridge, MA

<i>Unveiling the Lives and Deaths of Stars through Compact Object Mergers</i>	October 2019
CfA High Energy Astrophysics Seminar	Cambridge, MA
<i>Deciphering the Landscape of Binary Black Hole Formation Channels</i>	October 2019
CGCA Seminar	Milwaukee, WI
<i>Unveiling the Lives and Deaths of Stars through Compact Object Mergers</i>	March 2019
IGC Seminar	Portsmouth, UK
<i>From the Detected to the Detectors: Using Gravitational Waves to Enable Insights from the Stellar Graveyard & the Next Generation of Citizen Science</i>	March 2018
SPI-MAX Seminar	Oxford, UK
<i>From the Detected to the Detectors: Using Gravitational Waves to Enable Insights from the Stellar Graveyard & the Next Generation of Citizen Science</i>	February 2018

Contributed Talks & Posters.....

Aspen Winter Conference (Talk)	Aspen, CO
<i>Eccentric Black Hole Mergers in Dense Star Clusters: Post-Newtonian Effects & Higher Multiplicity Encounters</i>	February 2019
AAS 233 (Talk)	Seattle, WA
<i>Eccentric Black Hole Mergers in Dense Star Clusters: The Role of Binary-Binary Encounters</i>	January 2019
NSF Research Traineeship Annual Meeting (Poster)	Washington, DC
<i>Gravity Spy: Integrating Gravitational-Wave Astrophysics, Machine Learning, and Citizen Sciences</i>	September 2018
MODEST-18 (Talk)	Santorini, Greece
<i>The Role of Binary-Binary Interactions in Inducing Eccentric Black Hole Mergers</i>	June 2018
APS April Meeting (Talk)	Columbus, OH
<i>On the Progenitor of Binary Neutron Star Merger GW170817</i>	April 2018
Detecting the Unexpected: Discovery in the Era of Astronomically Big Data (Talk)	Baltimore, MD
<i>The Future of Citizen Science: Coupling Crowdsourcing and Machine Learning</i>	March 2017
APS April Meeting (Talk)	Washington, DC
<i>Discriminating Formation Channels of Binary Black Hole Systems with Advanced LIGO</i>	January 2017
AAS 229 (Talk)	Grapevine, TX
<i>Discriminating Formation Channels of Binary Black Hole Systems with Advanced LIGO</i>	January 2017
AAS 229 (Workshop & Poster)	Grapevine, TX
<i>Astrobites: Engaging Undergraduate Science Majors with Current Astrophysical Research</i>	January 2017
AAS 228 (Talk)	San Diego, CA
<i>Gravity Spy: Integrating aLIGO detector characterization, machine learning, and citizen science</i>	June 2016
Northwestern Computational Research Exposition (Poster)	Evanston, IL
<i>Integrating aLIGO detector characterization, machine learning, and citizen science</i> – Awarded first prize in poster competition	April 2016
Midwest Relativity Meeting (Talk)	Evanston, IL
<i>LIGO glitch classification through the combination of machine learning and citizen science</i>	September 2015

Outreach & Public Engagement

Science Communication.....

Astrobites	Blog
Author, Administrator, & Leadership Team	2014–Present
– 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

Organizer; Attendee

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

Workshop

2017–Present

Astronomy on Tap

Co-founder, organizer, host, speaker

– 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

Public Event

2015–Present

Rapid Fire Research

Founder, Chair

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

Departmental Event

2016–Present

Machine Learning Meetups

Organizer, Host

– Quarterly interdisciplinary colloquia on data science and machine learning topics

Public Event

2016–2018

Chicagoland Science Penpals

Participant

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

Event

2017

Public Talks & Lectures

Astronomer Conversations

Adler Planetarium, Space Visualization Laboratory

– Monthly public presentations at the Adler Planetarium for museum guests

Lecture Series

2014–Present

Astronomer Evenings

Northwestern University, Dearborn Observatory

– Presentations during public observing hours at the Dearborn Observatory

Lecture Series

2016–Present

UBS Investment Banking: Gravity Spy and LIGO

Virtual

Invited Speaker

September 2020

Chipping Norton Amateur Astronomy Group

Chipping Norton, UK

Keynote Lecture

February 2018

Take Our Children to Work Day

Northwestern University

Lecture

April 2016, 2018

Haven Midde School

Evanston, IL

Invited Speaker

April 2017, 2018

Chicago Astronomical Society

Adler Planetarium

Keynote Lecture

May 2017

Avery Coonley School

Downers Grove, IL

Invited Speaker

May 2017

Seven Minutes of Science: An Interdisciplinary Symposium

Northwestern University

Public Talk

April 2017

Highcrest Elementary

Wilmette, IL

Invited Speaker

March 2017

Einstein Evenings

Northwestern University, Dearborn Observatory

– Monthly presentations during observing hours on LIGO discoveries in celebration of the 100th anniversary of General Relativity

Lecture Series

2015–2016

Nettlehorst Elementary

Chicago, IL

Invited Speaker

February 2016

Publications.....

Astrobites	Blog
Authored over 20 blog posts on current research in astrophysics (Link)	2014–Present
LIGO Science Summary	Article
Companion science summary to the LIGO-Virgo O2 Populations paper (Link)	November 2018
Companion science summary to the GW170817 Detection paper (Link)	October 2017
LIGO Magazine	Magazine Article
The Gravity Spy Project - Machine Learning and Citizen Science (Link)	March 2017
Helix Magazine	Magazine Article
The Legacy of Scientific Discovery (Link)	March 2017

Teaching & Work Experience

Northwestern University	Lecture/TA
Introduction to Astronomy, Stellar Astrophysics, Data-Driven Research in Astronomy	2015–Present
– Guest lectured, developed assignments, graded, and ran telescope observing sessions	
GK12 Fellowship	Teaching
Reach for the Stars; Evanston, IL	2017–2018
– Co-taught astronomy classes at Evanston Township High School	
– Developed curriculum, coding-based lessons, and visualizations for high-school students	
Kids Science Labs	Teaching
Lead Teacher; Chicago, IL	2013–2015
– Taught classes of 3-12 year old students in hands-on, experiential science classes	
– Designed curriculum for science summer camps	
Adler Planetarium	Teaching
Science Leadership Corps Instructor, Mission Specialist; Chicago, IL	2012–2014
– Designed educational programming	
– Facilitated exhibits, performed experiments, and gave astronomy talks to the public	
– Led under-represented students in designing experiments for high-altitude balloon launches	

Students Mentored.....

Michael Kurkowski	Undergraduate
Pair Instability Supernova Prescriptions in Binary Population Synthesis; CIERA REU Student	2019
Jared Machtinger	High School
Population properties of binary black holes detected by LIGO; CIERA Summer Student	2019
Danai Avdela	High School
Population properties of binary black holes detected by LIGO; CIERA Summer Student	2019
Isaac Rivera	Undergraduate
Offset distributions of short gamma-ray bursts; CIERA REU Student	2018
Grace Kern	High School
Optimization of Gravity Spy image retirement; CIERA Summer Student	2018
Hannah Stein	High School
Optimization of Gravity Spy image retirement; CIERA Summer Student	2018
Yuqi Yun	Undergraduate
Gaussian Process regression of black hole mass distributions; CIERA REU Student	2016
Sophie Haight	High School
Gaussian Process regression of binary stellar evolution sequences; CIERA Summer Student	2016

Awards & Honors

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

Affiliations & Leadership Positions

- | | |
|---|--------------|
| ▷ Astrobites: Administrator, Author | 2014–Present |
| ▷ ComSciCon National: Organizer | 2017–Present |
| ▷ 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–Present |
| ▷ 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

- | | |
|--|--------------|
| Peer Reviewer for: | 2017–Present |
| – <i>The Astrophysical Journal</i> | |
| – <i>The Astrophysical Journal Letters</i> | |
| – <i>Astronomy and Astrophysics</i> | |
| – <i>Monthly Notices of the Royal Astronomical Society</i> | |
| – <i>Physical Review D</i> | |
| – <i>Physical Review Letters</i> | |