Michael J. Zevin || Curriculum Vitae

Northwestern University/CIERA, — 1800 Sherman Ave, Room 08029 — Evanston, IL 60201

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Ph.D. candidate in physics and astronomy at Northwestern University, studying gravitational-wave astrophysics, compact objects, stellar evolution, and star cluster dynamics. Numerous leadership roles and varied contributions in citizen science, science communication, and outreach.

Education

Northwestern	University	Ph.D., Matriculating May 2020
Evanston, IL	•	M.Sc., December 2016
Program:	Physics and Astronomy	
Certificates:	0	
Thesis:	Unveiling the Lives and Deaths of Stars through Compact Object	t Mergers
Advisor:	Vicky Kalogera	
University of 1	llinois	B.S. , May 2012
Champaign, IL		
Majors:	Astronomy, Physics	
Minor:	Music Performance	
Fellowships		
⊳ NSF IDE	AS Fellowship	2016–Present
▷ Illinois S	pace Grant Consortium Fellowship	2017–Present
⊳ NSF GK1	2 Fellowship	2017–2018
Oxford C	Centre for Cosmological Studies Balzan Fellowship ¹	2018
⊳ Kavli Su	mmer Fellowship ²	2017

Publications

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Forward Modeling of Double Neutron Stars: Insights from Highly-Offset Short Gamma-ray Bursts M. Zevin, L. Kelley, A. Nugent, W. Fong, C. Berry, V. Kalogera

The Astrophysical Journal Letters (submitted)

arXiv: 1910.03598

Can Neutron-Star Mergers Explain the r-process Enrichment in Globular Clusters?

M. Zevin, K. Kremer, D. M. Siegel, S. Coughlin, B. T.-H. Tsang, C. P. L. Berry, V. Kalogera

2019

ApJ

ApJ

2019

2019

The Astrophysical Journal (in press)

arXiv: 1906.11299

Eccentric Black Hole Mergers in Dense Star Clusters: The Role of Binary-Binary Encounters

M. Zevin, J. Samsing, C. L. Rodriguez, C. J. Haster, E. Ramirez-Ruiz

First Author & Chaired Papers (with links)

The Astrophysical Journal 871, 91

- Article in AAS Nova

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

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

On the Progenitor of Binary Neutron Star Merger GW170817 The LIGO Scientific Collaboration and Virgo Collaboration ³ The Astrophysical Journal Letters 850 , L40	ApJL 2017
Constraining Formation Models of Binary Black Holes with Gravitational-Wave Observations M. Zevin, C. Pankow, C. R. Rodriguez, L. Sampson, E. Chase, V. Kalogera, F. A. Rasio The Astrophysical Journal Letters 846, 82	ApJ 2017
 Gravity Spy: Integrating Advanced LIGO Detector Characterization, Machine Learning, and Citizen Science M. Zevin, S. Coughlin, S. Bahaadini, E. Besler, N. Rohani, S. Allen, M. Cabero, K. Crowston, A. K. Katsaggelos, S. L. Larson, T. K. Lee, C. Lintott, T. B. Littenberg, A. Lundgren, C. Østerlund, J. R. Smith, L. Trouille, V. Kalogera Classical and Quantum Gravity 34, 064003 Covered by AAS Press 	CQG 2017
Second & Third Author Papers (with links)	• • • • • • • • • • • • • • • • • • • •
COSMIC: Open-Source Binary Population Synthesis K. Breivik, S. Coughlin, M. Zevin, C Rodriguez, K. Kremer, C. S. Ye, J. J. Andrews, M. Kurkowski, M. Digman, S. Larson, F. A. Rasio The Astrophysical Journal Supplements (submitted) arXiv: 1911.00903	2019
Black Holes: The Next Generation C. Rodriguez, M. Zevin, P. Amaro-Seoane, S. Chatterjee, K. Kremer, F. A. Rasio, C. S. Ye Physical Review D 100, 043027	PRD 2019
Illuminating Black Hole Binary Formation Channels with Spins in Advanced LIGO C. Rodriguez, M. Zevin, C. Pankow, V. Kalogera, F. A. Rasio The Astrophysical Journal Letters 832, L2	ApJL 2016
Contributed Papers (with links)	
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. Pikovski, 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 IEEE Transactions on Learning Technologies (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 Physical Review D 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 Physical Review D 99, 063003	PRD 2019

³M. Zevin: Chair of paper-writing team and analysis lead

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 Physical Review D 98, 123005	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 Information Sciences Journal 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 The Astrophysical Journal Letters 854, L25 	ApJL 2018
Deep Multi-view Models for Glitch Classification S. Bahaadini, N. Rohani, S. Coughlin, M. Zevin, V. Kalogera, A. K. Katsaggelos IEEE International Conference on Acoustics, Speech, and Signal Processing Proceedings	ICASSP 2018
Incorporating Current Research into Formal Higher Education Settings using Astrobites N. E. Sanders, S. Kohler, C. Faesi, A. Villar, M. Zevin American Journal of Physics 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 The Astrophysical Journal 834, 154	APJ 2017

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

- Search for intermediate mass black hole binaries in the first and second observing runs of the Advanced LIGO and Virgo network⁴
 - A guide to LIGO-Virgo detector noise and extraction of transient gravitational-wave signals
- A gravitational-wave measurement of the Hubble constant following the second observing run of Advanced LIGO and Virgo
- An Optically Targeted Search for Gravitational Waves emitted by Core-Collapse Supernovae during the First and Second Observing Runs of Advanced LIGO and Advanced Virgo
- Model comparison from LIGO-Virgo data on GW170817's binary components and consequences for the merger remnant
- Search for Eccentric Binary Black Hole Mergers with Advanced LIGO and Advanced Virgo during their 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
- Search for gravitational waves from Scorpius X-1 in the second Advanced LIGO observing run with an improved hidden Markov model
- 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 BinaryBlack-hole Merger GW170814
- Search for sub-solar mass ultracompact binaries in Advanced LIGO's second observing run
- 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
- 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 LIGOs Second Observing Run

⁴M. Zevin: Parameter estimation lead for highest-significance IMBH trigger

- All-sky search for long-duration gravitational-wave transients in the second Advanced LIGO observing run
- Directional limits on persistent gravitational waves using data from Advanced LIGO's first two observing runs
- Tests of General Relativity with the Binary Black Hole Signals from the LIGO-Virgo Catalog GWTC-1
- A search for the isotropic stochastic background using data from Advanced LIGO's second observing run
- Constraining the p-Mode–g-Mode Tidal Instability with GW170817
- Narrow-band search for gravitational waves from known pulsars using the second LIGO observing run
- 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
- Binary Black Hole Population Properties Inferred from the First and Second Observing Runs of Advanced LIGO and Advanced Virgo⁵
- GWTC-1: A Gravitational-Wave Transient Catalog of Compact Binary Mergers Observed by LIGO and Virgo during the First and Second Observing Runs
 - 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 LIGOs 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 GW170817
- 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 Inspiral⁶
- 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

⁵M. Zevin: Education and Public Outreach Liaison

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- 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)
- 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

Colombia Astronomy Seminar Seminar *Getting the boot: Lonely GRBs, enigmatic r-process, and the birth of neutron stars* October 2019

New York, NY

MIT GRITTS Seminar Seminar Unveiling the Lives and Deaths of Stars through Compact Object Mergers October 2019

Cambridge, MA

CfA High Energy Astrophysics Seminar

Seminar Deciphering the Landscape of Binary Black Hole Formation Channels October 2019 Cambridge, MA

CGCA Seminar Seminar March 2019

Unveiling the Lives and Deaths of Stars through Compact Object Mergers Milwaukee, WI

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

Outreach & Public Engagement

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 Workshop

Organizer, Attendee 2017–Present

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

Astronomy on Tap Public Event

Co-founder, organizer, host, speaker

2015–Present

– 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–Present

– 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

– Monthly public presentations at the Adler Planetarium for museum guests

Astronomer Evenings Lecture Series

Northwestern University, Dearborn Observatory

2016-Present

- Presentations during public observing hours at the Dearborn Observatory

Chipping Norton Amateur Astronomy Group Keynote Lecture

Chipping Norton, UK

February 2018

Take Our Children to Work Day

Lecture

Northwestern University

April 2016, 2018

Haven Midde School

Invited Speaker April 2017, 2018

Evanston, IL

Keynote Lecture

Invited Speaker

Chicago Astronomical Society

May 2017

Adler Planetarium

May 2017

Avery Coonley School

Downers Grove, IL

May 2017

Seven Minutes of Science: An Interdisciplinary Symposium

viuy 2017

Northwestern University

Public Talk April 2017

Highcrest Elementary

Invited Speaker

Wilmette, IL

March 2017

Einstein Evenings Lecture Series

Northwestern University, Dearborn Observatory

2015-2016

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

Nettlehorst Elementary Invited Speaker Chicago, IL February 2016

Publications.....

Astrobites Blog 2014-Present

Authored over 20 blog posts on current research in astrophysics (Link)

Article

LIGO Science Summary 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

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

Offset distributions of short gamma-ray bursts; CIERA REU Student

2012-2014

2019

2018

2018

- 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

High School Jared Machtinger

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

High School Grace Kern

Optimization of Gravity Spy image retirement; CIERA Summer Student

Hannah Stein	High School	
Optimization of Gravity Spy image retirement; CIERA Summer Student	2018	
Yuqi Yun Gaussian Process regression of black hole mass distributions; CIERA REU Student	Undergraduate 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 (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

> 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

- The Astrophysical Journal
- The Astrophysical Journal Letters
- Astronomy and Astrophysics