# Michael J. Zevin || *Curriculum Vitae*

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

☎ 630.915.5870 • ✉ zevin@u.northwestern.edu • michaelzevin.github.io

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

### Academic Qualifications

**Northwestern University** — **Ph.D.**, *Matriculating May 2020*
*Evanston, IL* — **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** — **B.S.**, *May 2012*
*Champaign, IL*

| | |
|---|---|
| Majors: | Astronomy, Physics |
| Minor: | Music Performance |

### Fellowships

- **NSF IDEAS Fellowship** *2016–Present*
- **Illinois Space Grant Consortium Fellowship** *2017–Present*
- **NSF GK12 Fellowship** *2017–2018*
- **Oxford Centre for Cosmological Studies Balzan Fellowship**[1] *2018*
- **Kavli Summer Fellowship**[2] *2017*

## Publications

### First Author & Chaired Papers (with links)

**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* *2019*
The Astrophysical Journal Letters (submitted)
arXiv: 1910.03598

**Can Neutron-Star Mergers Explain the r-process Enrichment in Globular Clusters?** **ApJ**
*M. Zevin, K. Kremer, D. M. Siegel, S. Coughlin, B. T.-H. Tsang, C. P. L. Berry, V. Kalogera* *2019*
The Astrophysical Journal (in press)
arXiv: 1906.11299

**Eccentric Black Hole Mergers in Dense Star Clusters: The Role of Binary-Binary Encounters** **ApJ**
*M. Zevin, J. Samsing, C. L. Rodriguez, C. J. Haster, E. Ramirez-Ruiz* *2019*
The Astrophysical Journal **871**, 91
– Article in *AAS Nova*

[1] Research Advisor: Dr. Chris Lintott (New College, University of Oxford)
[2] Research Advisor: Dr. Enrico Ramirez-Ruiz (University of California Santa Cruz)

**On the Progenitor of Binary Neutron Star Merger GW170817** **ApJL**
The LIGO Scientific Collaboration and Virgo Collaboration[3] *2017*
The Astrophysical Journal Letters **850**, L40

**Constraining Formation Models of Binary Black Holes with Gravitational-Wave Observations** **ApJ**
***M. Zevin**, C. Pankow, C. R. Rodriguez, L. Sampson, E. Chase, V. Kalogera, F. A. Rasio* *2017*
The Astrophysical Journal Letters **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. 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*

## 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* *2019*
The Astrophysical Journal Supplements (submitted)
arXiv: 1911.00903

**Black Holes: The Next Generation** **PRD**
*C. Rodriguez, **M. Zevin**, P. Amaro-Seoane, S. Chatterjee, K. Kremer, F. A. Rasio, C. S. Ye* *2019*
Physical Review D **100**, 043027

**Illuminating Black Hole Binary Formation Channels with Spins in Advanced LIGO** **ApJL**
*C. Rodriguez, **M. Zevin**, C. Pankow, V. Kalogera, F. A. Rasio* *2016*
The Astrophysical Journal Letters **832**, L2

## Contributed Papers (with links)

**The Missing Link in Gravitational-Wave Astronomy: Discoveries waiting in the decihertz range** **ESA WP**
*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*** *2019*
ESA's Voyage 2050 White Paper

**Knowledge Tracing to Model Learning in Online Citizen Science Projects** **IEEE TLT**
*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*** *2019*
IEEE Transactions on Learning Technologies (accepted)

**Classifying the Unknown: Discovering Novel Gravitational-Wave Detector Glitches using Similarity Learning** **PRD** *2019*
*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

**Post-Newtonian Dynamics in Dense Star Clusters: Binary Black Holes in the LISA Band** **PRD**
*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*** *2019*
Physical Review D **99**, 063003

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

**Post-Newtonian Dynamics in Dense Star Clusters: Formation, Masses, and Merger Rates of Highly-Eccentric Black Hole Binaries** **PRD** *2018*
*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

**DIRECT: Deep Discriminative Embedding for Clustering of LIGO Data** **ICIP** *2018*
*S. Bahaadini, V. Noroozi, N. Rohani, S. Coughlin, **M. Zevin**, V. Kalogera, A. K. Katsaggelos*
25th IEEE International Conference on Image Processing Proceedings

**Machine Learning for Gravity Spy: Glitch Classification and Dataset** **ISJ** *2018*
*S. Bahaadini, V. Noroozi, N. Rohani, S. Coughlin, **M. Zevin**, J. R. Smith, V. Kalogera, A. K. Katsaggelos*
Information Sciences Journal **444**, 172

**Improvements in Gravitational-wave Sky Localization with Expanded Networks of Interferometers** **ApJL** *2018*
*C. Pankow, E. A. Chase, S. Coughlin, **M. Zevin**, V. Kalogera*
The Astrophysical Journal Letters **854**, L25

**Deep Multi-view Models for Glitch Classification** **ICASSP** *2018*
*S. Bahaadini, N. Rohani, S. Coughlin, **M. Zevin**, V. Kalogera, A. K. Katsaggelos*
IEEE International Conference on Acoustics, Speech, and Signal Processing Proceedings

**Incorporating Current Research into Formal Higher Education Settings using Astrobites** **AJP** *2017*
*N. E. Sanders, S. Kohler, C. Faesi, A. Villar, **M. Zevin***
American Journal of Physics **85**, 741

**Astrophysical Prior Information and Gravitational-Wave Parameter Estimation** **APJ** *2017*
*C. Pankow, L. Sampson, L. Perri, E. A. Chase, S. Coughlin, **M. Zevin**, V. Kalogera*
The Astrophysical Journal **834**, 154

## 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 network[4]
– 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

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

– Search for Transient Gravitational-wave Signals Associated with Magnetar Bursts during Advanced LIGOs Second Observing Run
– 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 Virgo[5]
– 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 Inspiral[6]
– 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

[5] ***M. Zevin***: Education and Public Outreach Liaison
[6] ***M. Zevin***: Education and Public Outreach Liaison

– 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)
– 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

**UCSC FLASH Seminar** — *Santa Cruz, CA*
*Deciphering the Landscape of Compact Binary Formation Channels* — November 2019

**UCSB Astro Lunch** — *Santa Barbara, CA*
*Deciphering the Landscape of Binary Black Hole Formation Channels* — November 2019

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

**MIT GRITTS Seminar** — *Cambridge, MA*
*Unveiling the Lives and Deaths of Stars through Compact Object Mergers* — October 2019

**CfA High Energy Astrophysics Seminar** — *Cambridge, MA*
*Deciphering the Landscape of Binary Black Hole Formation Channels* — October 2019

**CGCA Seminar** — *Milwaukee, WI*
*Unveiling the Lives and Deaths of Stars through Compact Object Mergers* — March 2019

**IGC Seminar** — *Portsmouth, UK*
*From the Detected to the Detectors: Using Gravitational Waves to Enable Insights from the Stellar Graveyard & the Next Generation of Citizen Science* — March 2018

**SPI-MAX Seminar** — *Oxford, UK*
*From the Detected to the Detectors: Using Gravitational Waves to Enable Insights from the Stellar Graveyard & the Next Generation of Citizen Science* — February 2018

## Contributed Talks & Posters

**Aspen Winter Conference (Talk)** — *Aspen, CO*
*Eccentric Black Hole Mergers in Dense Star Clusters: Post-Newtonian Effects & Higher Multiplicity Encounters* — February 2019

**AAS 233 (Talk)** — *Seattle, WA*
*Eccentric Black Hole Mergers in Dense Star Clusters: The Role of Binary-Binary Encounters* — January 2019

**NSF Research Traineeship Annual Meeting (Poster)** — *Washington, DC*
*Gravity Spy: Integrating Gravitational-Wave Astrophysics, Machine Learning, and Citizen Sciences* — September 2018

**MODEST-18 (Talk)** — *Santorini, Greece*
*The Role of Binary-Binary Interactions in Inducing Eccentric Black Hole Mergers* — June 2018

**APS April Meeting (Talk)** — *Columbus, OH*
*On the Progenitor of Binary Neutron Star Merger GW170817* — April 2018

**Detecting the Unexpected: Discovery in the Era of Astronomically Big Data (Talk)** — *Baltimore, MD*
*The Future of Citizen Science: Coupling Crowdsourcing and Machine Learning* — March 2017

**APS April Meeting (Talk)** — *Washington, DC*
*Discriminating Formation Channels of Binary Black Hole Systems with Advanced LIGO* — January 2017

**AAS 229 (Talk)** — *Grapevine, TX*
*Discriminating Formation Channels of Binary Black Hole Systems with Advanced LIGO* — January 2017

**AAS 229 (Workshop & Poster)** — *Grapevine, TX*
*Astrobites: Engaging Undergraduate Science Majors with Current Astrophysical Research* — January 2017

**AAS 228 (Talk)** — *San Diego, CA*
*Gravity Spy: Integrating aLIGO detector characterization, machine learning, and citizen science* — 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

**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**
*Evanston, IL* *April 2017, 2018*

**Chicago Astronomical Society** **Keynote Lecture**
*Adler Planetarium* *May 2017*

**Avery Coonley School** **Invited Speaker**
*Downers Grove, IL* *May 2017*

**Seven Minutes of Science: An Interdisciplinary Symposium** **Public Talk**
*Northwestern University* *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**
*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

**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** (*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*