

## Education

2018	<b>Ph.D. in Physics and Astronomy</b> Advisor: Shane L. Larson	Northwestern University
2015	<b>M.S. in Physics and Astronomy</b> Advisor: Shane L. Larson	Northwestern University
2012	<b>B.S. in Physics with Professional Emphasis, Cum Laude</b>	Utah State University

## Publications

<b>Post-Newtonian Dynamics in Dense Star Clusters: Binary Black Holes in the LISA Band</b>	Submitted to PRD
KREMER, K., RODRIGUEZ, C. L., AMARO-SEOANE, P., <b>Breivik, K.</b> + 7 CO-AUTHORS	arXiv:1802.05661
<b>Constraining Black Hole Formation with 2M05215658+4359220</b>	Submitted to ApJL
<b>Breivik, K.</b> , CHATTERJEE, S., ANDREWS, J. J.	arXiv:1810.08206
<b>LISA sources in Milky Way globular clusters</b>	2018, Phys. Rev. Lett. 120, 191103
KREMER, K., CHATTERJEE, S., <b>Breivik, K.</b> , RODRIGUEZ, C. L., LARSON, S. L., RASIO, F. A.	arXiv:1802.05661
<b>Characterizing double white dwarf binaries with LISA and Gaia</b>	2018, ApJ, 854L 1B
<b>Breivik, K.</b> , KREMER, K., BUENO, M., LARSON, S. L., COUGHLIN, S. KALOGERA, V.	arXiv:1710.08370
<b>Revealing black holes with Gaia</b>	2017, ApJ, 850L, 13B
<b>Breivik, K.</b> , CHATTERJEE, S., LARSON, S. L.	arXiv:1710.04657
<b>Accreting double white dwarf binaries: implications for LISA</b>	2017, ApJ, 846, 2
KREMER, K., <b>Breivik, K.</b> , LARSON, S. L., KALOGERA, V.	arXiv:1707.0110
<b>Distinguishing between formation channels for binary black holes with LISA</b>	2016, ApJ, 830L, 18B
<b>Breivik, K.</b> , RODRIGUEZ, C. L., LARSON, S. L., KALOGERA, V., RASIO, F. A.	arXiv: 1606.0955

## Honors & Awards

2018	<b>CITA Fellowship</b> 3 year postdoctoral fellowship
2017	<b>Blue Apple Award</b> Best student talk at the 2017 Midwest Relativity Meeting
2017	<b>NSF GK-12 'Reach for the Stars' Fellow</b> K-12 Teaching Fellowship
2017	<b>Chambliss Astronomy Achievement Award</b> Honorable Mention, 229th AAS Meeting
2016	<b>Northwestern Physics &amp; Astronomy Rapid Fire Research</b> 2nd Place
2014	<b>Illinois Space Grant Consortium Graduate Fellowship</b> Award Amount: \$10,000
2010	<b>Undergraduate Teaching Fellowship</b> Utah State University
2010	<b>Undergraduate Research and Creative Opportunities (URCO) Grant</b> Award Amount: \$2,000
2008	<b>Presidential Fellowship - 4 years</b> Utah State University

## Invited Talks and Workshops

<b>Binary stars: a multi-band, multi-messenger puzzle</b>	Columbia
FUTURE BY THE FUTURE WORKSHOP	Nov 30-Dec 1, 2018
<b>Exploring compact-binary astrophysics with multi-messenger astronomy</b>	NASA GSFC
ASTROPHYSICS SEMINAR	June 5, 2018
<b>Exploring compact-binary astrophysics with multi-messenger astronomy</b>	NASA MSFC
ASTROPHYSICS SEMINAR	March 27, 2018
<b>COSMIC probes into compact binary formation and evolution</b>	National Harbor, MD
NASA GW SIG MEETING, 231ST AAS MEETING	January 8, 2018
<b>The Architecture of LISA Science Analysis: Imagining the Future</b>	Keck Institute for Space Studies
WORKSHOP	January 16-19, 2018
<b>Exploring compact binary astrophysics with multi-messenger astronomy</b>	Caltech
TAPIR SEMINAR	December 1, 2017
<b>Exploring compact binary astrophysics with multi-messenger astronomy</b>	Columbia
ASTRO SEMINAR	November 16, 2017

## Exploring compact binary astrophysics with multi-messenger astronomy

ASTRO SEMINAR

AMNH

November 14, 2017

## Exploring stellar-mass compact binary astrophysics with LISA

CGCA SEMINAR

UW Milwaukee

June 2, 2017

## Contributed Presentations

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### Constraining black hole formation with 2M05215658+4359220

TALK AT THE 233ST MEETING OF THE AAS

Seattle, WA

Jan 2019

### LISA sources in globular clusters

TALK AT MODEST-18

Santorini, GR

June 2018

### COSMIC probes into compact binary formation and Evolution

DISSERTATION TALK AT THE 231ST MEETING OF THE AAS

National Harbor, MD

Jan 2017

### Revealing the Milky Way's black hole population with Gaia

TALK AT 27TH MIDWEST RELATIVITY MEETING

Ann Arbor, MI

Oct 2017

### Observing Mass-Transfer in Double White Dwarfs with LISA and Gaia

TALK AT 12TH EDOARDO AMALDI CONFERENCE ON GRAVITATIONAL WAVES

Pasadena, CA

July 2017

### Distinguishing Between Formation Channels for Binary Black Holes with LISA

POSTER SESSION AT 229TH MEETING OF THE AAS

Grapevine, TX

Jan 2017

### Distinguishing Between Formation Channels for Binary Black Holes with LISA

POSTER SESSION AT 11TH INTERNATIONAL LISA SYMPOSIUM

Zurich, SWI

Aug 2016

### Variance in binary stellar population synthesis

TALK AT APS APRIL MEETING

Salt Lake City, UT

April 2016

### Exploring galactic binary population variance with population synthesis

TALK AT MIDWEST RELATIVITY MEETING

Evanston, IL

Oct. 2015

### Probing the Milky Way electron density using multi-messenger astronomy

TALK AT APS APRIL MEETING

Baltimore, MD

April 2015

### Rapid Monte Carlo Simulation of Gravitational Wave Galaxies

POSTER SESSION AT 225TH MEETING OF THE AAS

Seattle, WA

Jan 2015

### Background Sky Variability for Multi-Messenger Follow-up Surveys

POSTER SESSION AT 219TH MEETING OF THE AAS

Austin, TX

Jan 2012

## Mentoring

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### Julianne Cronin

SIMULATING POPULATIONS OF OVER-CONTACT M DWARF BINARIES OBSERVABLE BY LISA

Undergraduate researcher; Present

Current student at Northwestern

### Amia Ross

SIMULATING POPULATIONS OF DOUBLE NEUTRON STAR BINARIES OBSERVABLE BY LISA AND LIGO

High school intern; Summer 2017

Attending Harvard in Fall 2018

### Michael Bueno

SIMULATING POPULATIONS OF DOUBLE WHITE DWARF BINARIES OBSERVABLE BY LISA AND GAIA; ARXIV:1710.08370

REU student; Summer 2016

Attending Northwestern in Fall 2018

## Service and Outreach

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### Referee for ApJ, ApJL, MNRAS

### CIERA Astronomer Evenings

FOUNDER AND LEAD ORGANIZER 2016-2018

Dearborn Observatory

Jan 2016 - Aug 2018

### Astronomy on Tap - Chicago

FOUNDING MEMBER AND PRESENTER

Chicagoland area, IL

March 2016 - Aug 2018

### Physics & Astronomy Graduate Student Council

FOUNDING MEMBER, ASTRONOMY OUTREACH COMMITTEE HEAD

Evanston, IL

Dec 2015 - Aug 2018

### Astronomy Conversations

MONTHLY VISIT TO ADLER'S SPACE VISUALIZATION LAB FOR CONVERSATIONS WITH PLANETARIUM VISITORS

Adler Planetarium

March 2016 - Aug 2018

## General Science Outreach and Education

PARTICIPANT

2010-Present

- I'm committed to sharing the work that I do with the public and have interacted with over 1500 people at more than 15 events across the Greater Toronto, Greater Chicagoland, and Salt Lake City areas; I'm happy to provide a detailed list of my public outreach activities on request

## Experience

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### RESEARCH

#### Graduate Research Assistant

Evanston, IL

CIERA, NORTHWESTERN UNIVERSITY

June 2013 - Present

- Monte Carlo simulations of compact binary populations
- Predicting gravitational wave source catalogs for LISA

#### Undergraduate Research Assistant

Logan, UT

UTAH STATE UNIVERSITY

Aug 2010 - June 2012

- Characterizing sky brightness fluctuations for optical follow up of gravitational wave events
- Observation the precession of the inner Jovian moons as a probe of general relativity

### TEACHING

#### NSF GK-12 Graduate Teaching Fellow

Chicago, IL

NORTHWESTERN/LAKE VIEW HIGH SCHOOL

2017-2018

Creating lesson plans designed to bring computational thinking to an astronomy class at Chicago's oldest public high school.

#### Guest Lectures

Evanston, IL

NORTHWESTERN UNIVERSITY

2016-2017

- May 25, 2017: Introduction to gravitational waves for upper division undergraduate astronomy course (Astron 331)
- Nov. 11, 2016: Overview of the atomic model for introductory, concept-based physics course (Phys 103)

#### Graduate Teaching Assistant

Athens, GA

UNIVERSITY OF GEORGIA

Aug. 2012 - May 2013

- Phys 1252: Introductory Physics for Engineers
- Astr 1010: Introductory Astronomy

#### Undergraduate Teaching Assistant: General Physics and Astronomy Labs

Logan, UT

UTAH STATE UNIVERSITY

Aug. 2010 - Jan. 2012

- Phys 2110/2120: Introductory Physics for Life Sciences
- Phys 1040: Introductory Astronomy
- Observatory operator and lab facilitator

## References

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### Shane L. Larson

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### Vicky Kalogera

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### Jeffery C. Livas

GRAVITATIONAL ASTROPHYSICS LAB

NASA/GSFC

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