Daniel J. Oliver

918-575-5671 | oliverda@oregonstate.edu | danieljoliver.com | https://github.com/DanielJOliver

Education

University of Arkansas — Fayetteville, AR
Ph. D. in Space and Planetary Sciences; Conc. Gravitational Wave Astrophysics — *May 2024*
Dissertation Title: The Gravitational Wave Peep: Improved Modeling of Highly Eccentric EMRIs for LISA Signal Confusion Noise

Oklahoma State University — Stillwater, OK
B.S. Physics, Minor: Philosophy — *May 2017*
Thesis Title: Slow Noise in a Laser with Injected Signal

Professional Experiences

NANOGrav Physics Frontier Center Postdoctoral Research Fellow — Sept. 2024 – Present
Oregon State University — *Corvallis, OR*
- Advisors: Dr. Jeffrey Hazboun & Dr. Xavier Siemens

Visiting Student Researcher — March 2023-March 2024
California Institute of Technology — *Pasadena, CA*
- Advisor/Host: Dr. Curt Cutler & Dr. Yanbei Chen
- Invited position working with Theoretical AstroPhysics In Relativity (TAPIR) group at Caltech along with JPL Staff Scientists on the development of data analysis tools for LISA

Niels Bohr International Academy: Summer School on Gravitational Wave Astrophysics — August 2021
Niels Bohr Institute at University of Copenhagen — *Copenhagen, Denmark*
- Summer reading on gravitational wave data analysis
- Culminating week resulting in five days of activities totaling 38 hours of active participation focusing on data analysis for LIGO, LISA, and Pulsar Timing Arrays

Summer Internship — Summer 2021
University of Nebraska-Kearney — *Kearney, NE*
- Advisor: Dr. Joel Berrier
- Worked on LISA signal confusion noise project utilizing Illustris Cosmological Simulation to create black hole mass functions

Assistant at Mendenhall Observatory — Sept. 2014 - Jan. 2016
Oklahoma State University — *Stillwater, OK*
- Advisor: Dr. Peter Shull
- Assisted with fundraising and renovations to the observatory which included hosting observational events using the 24-inch telescope

Workshops

LISA Sprint 3	April 2025
NASA Physics of the COSmos (PhysCOS) Early Career Workshop	Nov. 2024
Vanderbilt NANOGrav Hack Week	July 2024
Vanderbilt Initiative in Probes of Extreme Relativity (VIPER) Pulsar Timing Array Summer School	July 2024
LISA Sprint 2	April 2024
LISA Analysis Tools Workshop	April 2024
Gravitational Wave Astronomy Northwest (GWANW) Student Workshop	June 2021
Gravitational Wave Early Career Scientists Funding Opportunity Workshop	June 2021
Workshop on Gravitational Wave Astrophysics for Early Career Scientists	May 2021

Awards

Executive Award from Graduate and Professional Student Congress (GPSC) May 2022

University of Arkansas

- Recognition for outstanding contributions for graduate students and GPSC at the University of Arkansas

Lloyd B. Ham Award for Outstanding Teaching Assistant May 2021

University of Arkansas

- Recognition of contributions to teaching in the physics department during the COVID-19 Pandemic. Specifically with moving courses entirely online.

Eagle Scout Award Nov. 2008

Scouts BSA (Formerly Boy Scouts of America)

- Rank that less than 5% of Scouts earn, which requires hundreds of hours spent organizing and performing service projects for local communities amongst other activities.

Conference Organization (or Committee Member)

Gravitational Wave Investigative Science Experience (GravWISE) 2025

- Workshop for undergradutate students transitioning from community college to a four-year university, with a research focus on gravitational wave theory and data analysis.
- Gave lecture on gravitational waveform modeling
- Mentored a student led project on single pulsar noise analysis.

Outreach and Service

NASA Physics of the COSmos (PhysCOS) 2025-Present

- Managed NASA LISA (Laser Interferometer Space Antenna) booth at American Astronomical Society and American Physical Society Conferences

Gravitational Wave Collaborations (NANOGrav, LIGO-VIRGO-KAGRA, LISA Science Consortium) 2023-Present

- Managed Gravitational Wave Astrophysics booth at American Astronomical Society and American Physical Society Conferences

Letters to a Pre-Scientist (LPS) 2023-Present

- STEM Outreach organization which pairs students ("pre-scientists") from low-income communities with a STEM professional for a year-long pen pal program to broaden their awareness to what STEM professionals due and inspire them to explore a future in STEM.

Space Hogs (University of Arkansas 2018-2022

- Vice-President (2021-2022)
- STEM Outreach organization which hosted events based in astronomy for local communities and schools in northwest Arkansas.

OSU Astro Club (Oklahoma State University) 2014-2017

- Founding Member
- President (2015-2017)
- Vice-President (2014-2015)
- Hosted monthly sky viewings open to the public as well as monthly educational lectures about current astronomical news.

Society of Physics Students (Oklahoma State University) 2014-2017

- President (2016-2017)
- Secretary (2015-2016)
- Worked to educate local area and university students about physics and astronomy through various outreach events.

Media Appearances

Hosted a Science Cafe at Oklahoma State University September 20, 2016

Astronomy and Physics

Interview for Stillwater News Press August 12, 2015

Perseids will light up Stillwater

Interview for Stillwater News Press March 17, 2015

Equinox means equal light

Professional Memberships

NASA Physics of the COSmos (PhysCOS) 2024-Present
- Gravitational Wave Science Interest Group (GW SIG)

LIGO-VIRGO-KAGRA (LVK) Collaboration 2021-Present

LISA Science Consortium 2021-Present
- Waveform Working Group

North American Nanohertz Observatory for Gravitational Waves (NANOGrav) 2020-Present
- Associate Member
- Detection Working Group

American Astronomical Society (AAS) 2018-Present

American Physical Society (APS) 2018-Present

Mentoring

Oregon State University

Katelyn Glasby 2024-Present, Ph.D.
- "Orphan Memory Burst in LISA"

Martine Maggi 2024-Present, Ph.D.
- "Improvements to Calculations of Stochastic GWB Sensitivity Curves"

Kyle Gourlie 2024-2025, BS
- "Improvements to Calculations of Stochastic GWB Sensitivity Curves"

University of Arkansas

Harry O'Mara 2024-Present, Ph.D.
- "Searching for EMRI Signals Through Bayesian Analysis"

Teaching

University of Arkansas

PHYS 2074 University Physics II Lecturer
- Summer 2022

PHYS 1021L Physics for Human Affairs Lab TA
- Spring 2023, Fall 2023, Spring 2024

PHYS 2054L University Physics I Lab TA
- Spring 2022

PHYS 2031L College Physics II Lab TA
- Summer 2019

PHYS 3544 Optics Lab TA
- **Lead TA:** Fall 2019, Spring 2020, Fall 2020, Fall 2021, Fall 2022
- Fall 2018

ASTR/PHYS 2001L Introduction to Astronomy Lab TA
- Summer 2018, Spring 2019, Summer 2020, Spring 2023, Summer 2023, Fall 2023, Spring 2024

PHYS 2074L University Physics II Lab TA
- **Lead TA:** Spring 2021, Summer 2021, Spring 2022
- Spring 2018, Fall 2022

Invited Talks

LIGO Seminar June 2023

California Institute of Technology

"Gravitational Wave Peeps and Their Implication for LISA Data Analysis"

Conference Presentations

International Pulsar Timing Array Science Meeting June 2025
Pasadena, CA
Oral Talk: "Building PTA Sensitivity Curves for Stochastic Background Anisotropy"

American Physical Society (APS) Global Physics Summit March 2025
Anaheim, CA
Oral Talk: "Building PTA Sensitivity Curves for Stochastic Background Anisotropy"

American Astronomical Society (AAS) Winter 245 Meeting January 2025
National Harbor, MD
Oral Talk: "Gravitational Wave Peep Contributions to Background Signal Confusion Noise for LISA"

American Physical Society (APS) April Meeting April 2024
Sacramento, CA
Oral Talk: "Gravitational Wave Peep Contributions to Background Signal Confusion Noise for LISA"

American Physical Society (APS) April Meeting April 2023
Minneapolis, MN
Oral Talk: "Improved Modeling of Highly Eccentric EMRI Signal Confusion Noise for LISA: The Gravitational Wave Peep and Its Implication for Data Analysis

Mid-American Regional Astrophysics Conference (MARAC) October 2022
Fayetteville, AR
Oral Talk: "Improved Modeling of Highly Eccentric EMRI Signal Confusion Noise for LISA"

American Physical Society (APS) April Meeting April 2022
New York, NY
Oral Talk: "Improved Modeling of Highly Eccentric EMRI Signal Confusion Noise for LISA"

Mid-American Regional Astrophysics Conference (MARAC) April 2022
Virtual
Poster: "Improved Modeling of EMRI Signal Confusion Noise for LISA"

American Physical Society (APS) April Meeting April 2021
Virtual
Oral Talk: "Improved Modeling of EMRI Signal Confusion Noise for LISA"

American Physical Society (APS) April Meeting April 2020
Cancelled Due to COVID-19
Oral Talk: "Modeling Populations of Highly Eccentric EMRIs for LISA Signal Confusion Noise"

9th Gulf Coast Gravity Meeting March 2020
Cancelled Due to COVID-19
Oral Talk: "Lining Up Your Shots: Capturing the Interesting Part of Highly Eccentric EMRI Gravitational Wave Snapshots"

American Physical Society (APS) April Meeting April 2019
Denver, CO
Poster: "Computation of highly eccentric EMRIs to characterize background confusion noise in LISA"

Publications

2. **D. J. Oliver**, A. D. Johnson, L. Janssen, J. Berrier, K. Glampedakis, D. Kennefick, "Gravitational Wave Peep Contributions to Background Signal Confusion Noise for LISA", (Submitted to Physical Review D, pre-print available on arXiv: 2507.19704)

1. **D. J. Oliver**, A. D. Johnson, J. Berrier, K. Glampedakis, D. Kennefick, "Gravitational Wave Peeps from EMRIs and their Implication for LISA Signal Confusion Noise", Classical and Quantum Gravity, 2024, DOI: 10.1088/1361-6382/ad40f2, arXiv: 2305.05793.

References

Daniel Kennefick
Professor of Physics
University of Arkansas
226 Physics Building
Fayetteville, AR 72701
(479) 575-6784
danielk@uark.edu

Jeffrey Hazboun
Associate Professor of Physics
Oregon State University
313 Weniger Hall
Corvallis, OR 97331
(541) 737-4631
jeffrey.hazboun@oregonstate.edu

Xavier Siemens
Professor of Physics
Oregon State University
367 Weniger Hall
Corvallis, OR 97331
(541) 737-7512
xavier.siemens@oregonstate.edu

Kostas Glampedakis
Professor of Physics
University of Murcia
C. Campus Universitario
Murcia, Spain
+34 868 88 8094
kostas@um.es

Joel Berrier
Associate Professor of Physics/Department Chair
University of Nebraska-Kearney
2504 9th Ave
Kearney, NE 68849
(308) 865-8282
berrierjc@unk.edu