

Jeffrey S. Hazboun | Curriculum Vitae

Department of Physics, Oregon State University
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Professional Experience

Oregon State University	Corvallis, OR
◦ Assistant Professor of Physics	September 2022–Present
University of Washington Bothell	Bothell, WA
◦ NANOGrav Physics Frontiers Center Senior Postdoctoral Fellow	August 2018–September 2022
University of Texas Rio Grande Valley	Brownsville, TX
◦ NANOGrav Physics Frontiers Center Postdoctoral Fellow	August 2016–July 2018
Hendrix College	Conway, AR
◦ Visiting Assistant Professor	August 2015–July 2016
Utah State University	Logan, UT
◦ Postdoctoral Teaching Position/ Head Online Class Developer	September 2014 - August 2015
Georgia Institute of Technology	Atlanta, GA
◦ Visiting Scholar, Center for Relativistic Astrophysics	June 2012 - May 2013

Education

PhD in Physics	December 2014
Utah State University	Logan, Utah
Advisor: Dr. James T. Wheeler	
Dissertation Title: Conformal gravity and time	
MS Physics (Mathematics Minor)	June 2008
Oregon State University	Corvallis, Oregon
Advisor: Dr. Tevian Dray	
Thesis Title: The effects of negative-energy shells on Schwarzschild spacetime	
BS Biology	December 1999
State University of New York, College of Environmental Science and Forestry	Syracuse, New York

Grants, Funding & Awards

Proposal (PI): "Pulsar Timing Array GW Signal Analysis Using Big Data Techniques"	2019
◦ PI Jeffrey Hazboun, a submission to Amazon Web Services Machine Learning Research Awards.	
◦ Total award: \$50,000 in AWS Promotional Credits.	

Observing Proposals

Co-I: "Monitoring pulse-shape changes in the IPTA pulsar sample"	May 2021
◦ Giant Metrewave Radio Telescope, Target of Opportunity proposal	
◦ Status: awarded 10.0 hours	
Co-I: "Tracking Rapid and Unexpected Pulse Shape Changes in the MSP J1713+0747"	May 2021

- Very Large Array, Director's discretionary time proposal VLA/21A – 426
- Status: awarded 14.0 hours

Co-I: **"Monitoring pulse shape changes in the International Pulsar Timing Array"**

June 2021

- Parkes Observatory, Non A-priori Assignable Proposal
- Status: awarded 10.0 hours

Co-I: **"High Cadence Observations of MSPs for Gravitational Wave Detection"**

March 2020

- Arecibo Radio Telescope, proposal P2945
- Status: awarded 32.5 hours

Co-I: **"High Time Resolution Observations of a Bright Millisecond Pulsar"**

November 2018

- Greenbank Telescope, Project ID GBT18B – 355
- Status: awarded 5 hours

Publications

- **Metrics** available at [InspireHEP](#) or [Google Scholar](#).

Submitted.....

5. *The NANOGrav 15-year Data Set: Constraints on Supermassive Black Hole Binaries from the Gravitational Wave Background.*
Gabriella Agazie, [...], **J. S. Hazboun**, et al. [114 Authors]
[Arxiv:2306.16220](#)
4. *The NANOGrav 15-year Gravitational-Wave Background Analysis Pipeline.*
Aaron D. Johnson, [...], **J. S. Hazboun**, et al. [96 Authors]
[Arxiv:2306.16223](#)
3. *The NANOGrav 15-year Data Set: Search for Anisotropy in the Gravitational-Wave Background.*
Gabriella Agazie, [...], **J. S. Hazboun**, et al. [93 Authors]
[Arxiv:2306.16221](#)
2. *Analytic distribution of the optimal cross-correlation statistic for stochastic gravitational-wave-background searches using pulsar timing arrays.*
J. S. Hazboun, P. M. Meyers, J. D. Romano, X. Siemens, A. M. Archibald
[Arxiv:2305.01116](#)
1. *The NANOGrav 12.5-year Data Set: Bayesian Limits on Gravitational Waves from Individual Supermassive Black Hole Binaries.*
Zaven Arzoumanian, [...], **J. S. Hazboun**, et al. [78 Authors]
[Arxiv:2301.03608](#)

Accepted.....

2. *The NANOGrav 15-year Data Set: Bayesian Limits on Gravitational Waves from Individual Supermassive Black Hole Binaries.*
Gabriella Agazie, [...], **J. S. Hazboun**, et al. [99 Authors]
[The Astrophysical Journal Letters](#), -, -, (2023)
1. *An unusual pulse shape change event in PSR J1713+0747 observed with the Green Bank Telescope and CHIME.*
Ross J. Jennings, [...], **J. S. Hazboun**, et al. [44 Authors]
[The Astrophysical Journal](#), -, -, (2022)

Published.....

40. *The NANOGrav 15 yr Data Set: Search for Signals from New Physics.*
Adeela Afzal, [...], **J. S. Hazboun**, et al. [124 Authors]
[The Astrophysical Journal Letters](#), **951**, 1, (2023)

39. *The NANOGrav 15 yr Data Set: Observations and Timing of 68 Millisecond Pulsars.*
Gabriella Agazie, [...], **J. S. Hazboun**, et al. [101 Authors]
[The Astrophysical Journal Letters](#), **951**, 1, (2023)
38. *The NANOGrav 15 yr Data Set: Detector Characterization and Noise Budget.*
Gabriella Agazie, [...], **J. S. Hazboun**, et al. [92 Authors]
[The Astrophysical Journal Letters](#), **951**, 1, (2023)
37. *The NANOGrav 15 yr Data Set: Evidence for a Gravitational-wave Background.*
Gabriella Agazie, [...], **J. S. Hazboun**, et al. [115 Authors]
[The Astrophysical Journal Letters](#), **951**, 1, (2023)
36. *The NANOGrav 15-year Data Set: Constraints on Supermassive Black Hole Binaries from the Gravitational Wave Background.*
Gabriella Agazie, [...], **J. S. Hazboun**, et al. [114 Authors]
[Arxiv:2306.16220](#)
35. *Disentangling Multiple Stochastic Gravitational Wave Background Sources in PTA Datasets.*
Andrew R. Kaiser, [...], **J. S. Hazboun**, et al. [10 Authors]
[The Astrophysical Journal](#), **938**, 2, (2022)
34. *Bayesian Solar Wind Modeling with Pulsar Timing Arrays.*
J. S. Hazboun, et al. [30 Authors]
[The Astrophysical Journal](#), **929**, 1, (2022)
33. *A Detection of Red Noise in PSR J1824–2452A and Projections for PSR B1937+21 using NICER X-ray Timing Data.*
J. S. Hazboun, et al. [20 Authors]
[The Astrophysical Journal](#), **928**, 1, (2022)
32. *The International Pulsar Timing Array second data release: Search for an isotropic Gravitational Wave Background.*
J. Antoniadis, [...], **J. S. Hazboun**, et al. [70 Authors]
[Monthly Notices of the Royal Astronomical Society](#), **510**, 4, (2022)
31. *Searching For Gravitational Waves From Cosmological Phase Transitions With The NANOGrav 12.5-year dataset.*
Z. Arzoumanian, [...], **J. S. Hazboun**, et al. [65 Authors]
[Physical Review Letters](#), **127**, 25, (2021)
30. *The NANOGrav 12.5-year data set: Search for Non-Einsteinian Polarization Modes in the Gravitational-Wave Background.*
Z. Arzoumanian, [...], **J. S. Hazboun**, et al. [71 Authors]
[The Astrophysical Journal Letters](#), **923**, 2, (2021)
29. *Multimessenger pulsar timing array constraints on supermassive black hole binaries traced by periodic light curves.*
Chengcheng Xin, Chiara M. F. Mingarelli, **J. S. Hazboun**
[The Astrophysical Journal](#), **915**, 2, (2021)
28. *The NANOGrav 11yr Data Set: Limits on Supermassive Black Hole Binaries in Galaxies within 500Mpc.*
Z. Arzoumanian, [...], **J. S. Hazboun**, et al. [57 Authors]
[The Astrophysical Journal](#), **914**, 2, (2021)
27. *Precision Timing of PSR J0437-4715 with the IAR Observatory and Implications for Low-Frequency Gravitational Wave Source Sensitivity.*
M. T. Lam, **J. S. Hazboun**
[The Astrophysical Journal](#), **911**, 2, (2021)

26. *Astrophysics Milestones For Pulsar Timing Array Gravitational Wave Detection.*
N. S. Pol, [...], **J. S. Hazboun**, et al. [51 Authors]
[The Astrophysical Journal Letters](#), **911**, 2, (2021)
25. *A Study in Frequency-Dependent Effects on Precision Pulsar Timing Parameters with the Pulsar Signal Simulator.*
B. J. Shapiro-Albert, **J. S. Hazboun**, M. A. McLaughlin, M. T. Lam
[The Astrophysical Journal](#), **909**, 2, (2021)
24. *Common-spectrum process versus cross-correlation for gravitational-wave searches using pulsar timing arrays.*
J. D. Romano, **J. S. Hazboun**, X. Siemens, A. M. Archibald
[Physical Review D](#), **103**, 6, (2021)
23. *The Pulsar Signal Simulator: A Python package for simulating radio signal data from pulsars.*
J. S. Hazboun, et al. [10 Authors]
[Journal of Open Software Science](#), **6**, 58, (2021)
22. *The NANOGrav 12.5-year Data Set: Search For An Isotropic Stochastic Gravitational-Wave Background.*
Z. Arzoumanian, [...], **J. S. Hazboun**, et al. [61 Authors]
[The Astrophysical Journal Letters](#), **905**, 2, (2020)
21. *Model Dependence of Bayesian Gravitational-Wave Background Statistics for Pulsar Timing Arrays.*
J. S. Hazboun, J. Simon, X. Siemens, J. D. Romano
[The Astrophysical Journal Letters](#), **905**, 1, (2020)
20. *The NANOGrav 12.5-year Data Set: Observations and Narrowband Timing of 47 Millisecond Pulsars.*
Md F. Alam, [...], **J. S. Hazboun**, et al. [70 Authors]
[The Astrophysical Journal Supplements](#), **252**, 4, (2020)
19. *Multi-Messenger Gravitational Wave Searches with Pulsar Timing Arrays: Application to 3C66B Using the NANOGrav 11-year Data Set.*
Z. Arzoumanian, [...], **J. S. Hazboun**, et al. [59 Authors]
[The Astrophysical Journal](#), **900**, 2, (2020)
18. *The NANOGrav 12.5-year Data Set: Wideband Timing of 47 Millisecond Pulsars.*
Md F. Alam, [...], **J. S. Hazboun**, et al. [70 Authors]
[The Astrophysical Journal Supplements](#), **252**, 1, (2020)
17. *Modeling the Uncertainties of Solar System Ephemerides for Robust Gravitational-wave Searches with Pulsar-timing Arrays.*
M. Vallisneri, [...], **J. S. Hazboun**, et al. [64 Authors]
[The Astrophysical Journal](#), **893**, 2, (2020)
16. *The NANOGrav 11 yr Data Set: Evolution of Gravitational-wave Background Statistics.*
J. S. Hazboun, et al. [63 Authors]
[The Astrophysical Journal](#), **890**, 2, (2020)
15. *The NANOGrav 11 yr Data Set: Limits on Gravitational Wave Memory.*
K. Aggarwal, [...], **J. S. Hazboun**, et al. [61 Authors]
[The Astrophysical Journal](#), **889**, 1, (2020)
14. *The International Pulsar Timing Array: second data release.*
B. B. P. Perera, [...], **J. S. Hazboun**, et al. [75 Authors]
[Monthly Notices of the Royal Astronomical Society](#), **490**, 4, (2019)
13. *The NANOGrav 11 yr Data Set: Limits on Gravitational Waves from Individual Supermassive Black Hole Binaries.*
K. Aggarwal, [...], **J. S. Hazboun**, et al. [64 Authors]
[The Astrophysical Journal](#), **880**, 2, (2019)

12. *The astrophysics of nanohertz gravitational waves.*
S. Burke-Spolaor, [...], **J. S. Hazboun**, et al. [15 Authors]
[The Astronomy and Astrophysics Review](#), **27**, 1, (2019)
11. *Realistic sensitivity curves for pulsar timing arrays.*
J. S. Hazboun, J. D. Romano, T. L. Smith
[Physical Review D](#), **100**, 10, (2019)
10. *Hasasia: A Python package for Pulsar Timing Array Sensitivity Curves.*
J. S. Hazboun, J. D. Romano, T. L. Smith
[Journal of Open Software Science](#), **4**, 42, (2019)
9. *An acoustical analogue of a galactic-scale gravitational-wave detector.*
M. T. Lam, J. D. Romano, J. S. Key, M. Normandin, **J. S. Hazboun**
[American Journal of Physics](#), **86**, 10, (2018)
8. *A Second Chromatic Timing Event of Interstellar Origin toward PSR J1713+0747.*
M. T. Lam, [...], **J. S. Hazboun**, et al. [37 Authors]
[The Astrophysical Journal](#), **861**, 2, (2018)
7. *The NANOGrav 11-year Data Set: Pulsar-timing Constraints on the Stochastic Gravitational-wave Background.*
Z. Arzoumanian, [...], **J. S. Hazboun**, et al. [62 Authors]
[The Astrophysical Journal](#), **859**, 1, (2018)
6. *Constructing an explicit AdS/CFT correspondence with Cartan geometry.*
J. S. Hazboun
[Nuclear Physics B](#), **929**, pp. 254-265, (2018)
5. *Power radiated by a binary system in a de Sitter universe.*
B. Bonga, **J. S. Hazboun**
[Physical Review D](#), **96**, 6, (2017)
4. *C7 multi-messenger astronomy of GW sources.*
M. Branchesi, [...], **J. S. Hazboun**, et al. [45 Authors]
[General Relativity and Gravitation](#), **46**, 9, (2014)
3. *Time and dark matter from the conformal symmetries of Euclidean space.*
J. S. Hazboun, J. T. Wheeler
[Classical and Quantum Gravity](#), **31**, 21, (2014)
2. *A systematic construction of curved phase space: A gravitational gauge theory with symplectic form.*
J. S. Hazboun, J. T. Wheeler
[Journal of Physics: Conference Series](#), **360**, 012013, (2012)
1. *The Effect of Negative-Energy Shells on the Schwarzschild Black Hole.*
J. S. Hazboun, T. Dray
[General Relativity and Gravitation](#), **42**, pp. 1457-1467, (2010)

Technical and White Papers.....

9. *Heliosphere Meets Interstellar Medium, in a Galactic Context.*
Stella Koch Ocker, [...], **J. S. Hazboun**, et al. [11 Authors]
[Arxiv:2208.11804](#)
8. *Pulsar Timing Arrays: Gravitational Waves from Supermassive Black Holes and More.*
I. Stairs, [...], **J. S. Hazboun**, et al. [32 Authors]
[Canadian Long Range Plan for Astronomy and Astrophysics White Papers](#), **2020**, pp. 16, (2019)
7. *The NANOGrav Program for Gravitational Waves and Fundamental Physics.*
S. Ransom, [...], **J. S. Hazboun**, et al. [15 Authors]
[Bulletin of American Astronomical Society](#), **51**, pp. 195, (2019)

6. *NANOGrav Education and Outreach: Growing a Diverse and Inclusive Collaboration for Low-Frequency Gravitational Wave Astronomy.*
Timothy Dolch, [...], **J. S. Hazboun**, et al. [27 Authors]
[Bulletin of American Astronomical Society](#), **51**, pp. 254, (2019)
5. *The Gravitational View of Massive Black Hole Mergers.*
Monica Colpi, [...], **J. S. Hazboun**, et al. [19 Authors]
[Bulletin of American Astronomical Society](#), **51**, 3, (2019)
4. *Physics Beyond the Standard Model With Pulsar Timing Arrays.*
Xavier Siemens, **J. S. Hazboun**, et al. [8 Authors]
[Bulletin of American Astronomical Society](#), **51**, 3, (2019)
3. *The Second International Pulsar Timing Array Mock Data Challenge.*
J. S. Hazboun, C. M. F. Mingarelli, K. J. Lee
[Arxiv:1810.10527](#)
2. *Null-stream pointing with pulsar timing arrays.*
J. S. Hazboun, S. L. Larson
[Arxiv:1607.03459](#)
1. *Limiting alternative theories of gravity using gravitational wave observations across the spectrum.*
J. S. Hazboun, M. P. Marcano, S. L. Larson
[Arxiv:1311.3153](#)

Teaching & Mentoring

Teaching Positions.....

- **Assistant Professor of Physics**, Oregon State University, Fall 2022 - Present
Electromagnetism and General Physics I
- **Visiting Assistant Professor**, Hendrix College, Fall 2015 - Spring 2016
Astronomy, Cosmology, Quantum Mechanics, and General Physics I
Mentored 4 undergraduate researchers.
- **Physics Instructor**, Utah State University, Spring 2015
General Physics II: Physics for the Life Sciences class.
Instructor of Record for 165 students.
Supervised nine teaching assistants.
- **Astronomy Instructor**, Utah State University, Fall 2014
Instructor of record for a 300+ person astronomy class.
Supervised two teaching assistants.
- **Online Physics Course Developer & Instructor**, Utah State University, 2012-2014
The Universe: Proposed, developed and taught an online cosmology class.
Aimed at non-science majors.
Continuously offered for the last 7 semesters.
Over 2000 students have taken this class.
- **Physics Instructor**, Utah State University, Summer 2011
General Physics I: Instructor of Record
- **MCAT Physics Instructor** Princeton Review, Portland, Oregon, Summer 2007
Developed curriculum to help students review for physics portion of the MCAT exam.
Taught students test-taking strategies to prepare for a stressful and fast-paced exam.

Courses.....

- **Courses Instructed**, *Textbook* (Students × Credit Hours) [cumulative]
- **Electromagnetism**, *Griffiths* (111 hrs)

- **Quantum Mechanics**, Griffiths (39 hrs)
- **Cosmology**, Ryden (27 hrs)
- **Astronomy**, Bennett, et al. (1300 hrs)
- **The Universe**, Ratcliffe (1200 hrs)
- **Physics for the Life Sciences 1**, Cutnell & Johnson (75 hrs)
- **Physics for the Life Sciences 2**, Cutnell & Johnson (450 hrs)
- **Physics for Engineers 1**, Halliday & Resnick (75 hrs)

Graduate Student Research Mentoring.....

- Brent Shapiro-Albert, West Virginia University 2018-2020
"Chromatic Covariances with the Pulsar Signal Simulator"
- Andrew Kaiser, West Virginia University 2018-2020
"Bayesian Non-Linear Timing with Gravitational Wave PTA Software"

Undergraduate Student Research Mentoring.....

- Kalista Wayt, University of Washington Bothell 2022-Present
"IPTA Quick Optimal Statistic"
- Christine Ye, University of Washington Bothell 2020-2022
"PTA False Alarm Studies"
- Min Young Kim, University of Washington Seattle 2018-2019
"Bayesian Pulsar Timing"
- Kyle Gersbach, University of Washington Bothell 2018-2020
"Teaching with the Pulsar Signal Simulator"
- Jacob Hesse, University of Washington Bothell 2017-2018
"Efficiently Simulating NANOGrav Pulsars"
- Amelia Henkel, REU UT Rio Grande Valley Summer 2017
"Dispersing Simulated Baseband Pulsar Signals"
- Cassidy Wagner, REU UT Rio Grande Valley Summer 2017
"Simulating Interstellar Medium Effects with Convolution"
- Chris Griffin, Hendrix College 2015-2016
"Conformal Diagrams of Crossing Spherical Shells in Schwarzschild Spacetime"
- Devon Roell, Hendrix College 2015-2016
"The Quantum Exchange Force and Gravity"
- Eric Mullins, Hendrix College 2015-2016
"Localizing Gravitational Wave Sources with Noisy Null Signals"
- Connor Nelson, Hendrix College 2015-2016
"Localizing Multiple Gravitational Wave Sources with Null Signals"
- Manuel Pichardo Marcano, Utah State University 2012-2013
"Multi-messenger Pulsar Timing Array Sources and Propagation Tests"

Teaching assistant.....

- Utah State University Fall 2009-Spring 2012
General Physics I: Recitation Leader and Lab Instructor
General Physics II: Recitation Leader and Lab Instructor
- Oregon State University Fall 2006-Spring 2009
Paradigms in Physics TA: NSF funded higher division class reform project.
Facilitated group work and took part in curriculum meetings.
Physics for the Life Sciences: Recitation Leader and Lab Instructor
General Physics II: Lab Instructor

Leadership & Professional Service

Research leadership.....

- **Lead**, NANOGrav 15-year Detector Characterization *Mar 2021–Present*
- **Co-chair**, IPTA Gravitational Wave Analysis Group *Jan 2019–Dec 2021*
- **Co-chair**, IGRAV Diversity, Equity & Inclusion Working Group *Jan 2019–July 2021*
- **Co-chair**, IPTA Data Challenge Group *Mar 2018–Jan 2022*

Reviewer for international journals.....

- The Astrophysical Journal
- General Relativity & Gravitation
- Physical Review Letters
- Classical and Quantum Gravity
- Monthly Notices of the Royal Astronomical Society
- European Journal of Physics
- Physical Review D

Conference organization.....

- Local Organizing Committee, NANOGrav Spring Meeting, Oregon State University 2023
- Local Organizing Committee, Conferences for Undergraduate Women in Physics, UW Seattle 2019
- Local Organizing Committee Chair, NANOGrav Spring Meeting, UW Bothell 2019
- LISA Data Analysis Workshop, AAS233 2019
- Scientific Organizing Committee, LISA Symposium, Chicago 2018
- Scientific Organizing Committee, NANOGrav Spring Meeting, University of Virginia 2018
- Scientific Organizing Committee, NANOGrav Spring Student Workshop, University of Virginia 2018
- Student Workshop Organizer, IPTA Meeting, Paris, France 2017
- Session Chair, *Black Holes*, AAS235 2020
- Session Chair, LISA Symposium 2018

Code & data sharing.....

- Jupyter Notebook examples for pta_forecasts. Based on arxiv.org/abs/2009.11865 2020
https://github.com/Hazboun6/pta_forecasts
- Introductory data analysis tutorial. 2019
https://github.com/Hazboun6/data_analysis_tutorial
- Developer of open-source Python GW analysis software enterprise 2017–
<https://github.com/nanograv/enterprise>

Professional affiliations.....

- LISA Consortium, *Member*
- North American Nanohertz Observatory for Gravitational-waves (NANOGrav), *Full member*
- International Pulsar Timing Array (IPTA), *Member*
- American Physical Society (DGRAV), *Member*
- American Astronomical Society, *Member*

Software Development

Lead Developer.....

Hasasia

- *Python package for calculating pulsar timing array sensitivity curves and signal-to-noise ratios.*
- <https://pypi.org/project/hasasia/>

Pulsar Signal Simulator

- *Python package for simulating pulsar observation data.*
- <https://github.com/PsrSigSim/PsrSigSim>

La Forge

- *Python package for processing data from Bayesian analyses of PTA data.*
- <https://pypi.org/project/la-forge/>

Pulsar Data Toolbox

- *Python package for accessing pulsar data files.*
- <https://pypi.org/project/pdat/>

Development Team**Enterprise**

- *Python package for bayesian PTA data analysis.*
- <https://github.com/nanograv/enterprise>

enterprise_extensions

- *Python package for building bayesian analysis models.*
- https://github.com/nanograv/enterprise_extensions

gwent

- *Python package calculating gravitational wave sensitivities across the spectrum*
- <https://pypi.org/project/gwent/>

Tabletop PTA

- *Python package for an acoustical PTA demonstration.*
- https://pypi.org/project/tabletop_pta/

Outreach, Diversity, & Media Engagement**Outreach**

- North City Tech Meetup, *"Searching for Gravitational Waves with a Galactic-Scale Detector"* 2021
- Gravitational Wave Astronomy, Eastside Preparatory *"How are gravitational waves detected?"* 2020
- Science Wednesday Panel Discussion, King's Live Music *"The Science of Time Travel"* 2015
- Science Fiction Club Talk, Hendrix College *"Black Holes and Wormholes"* 2015
- Science Unwrapped (500 person public lecture), Utah State University *"Explore to Conserve"* 2013
- Conservation Club Talk, Weber State *"A Scientist's Role in Conservation"* 2012
- Science Unwrapped, Swaner Ecocenter *"A Scientist's Role in Modern Exploration"* 2012
- Cache Valley Stargazers Talk, Logan, UT *"Black Holes: Ninjas of the Night Sky"* 2009

Diversity & Equity

- Member, Diversity, Inclusion, Culture & Equity Committee, Oregon State Physics Department, Sept 2022 –
- Founding Co-chair, Diversity Equity & Inclusion Working Group, [International Gravitational Outreach Group](#), Jul 2018–Sep 2021
- Member of the NANOGrav chapter of the [APS Inclusion, Diversity, & Equity Alliance](#)
- Local Organizing Committee, UW, Seattle (2019) [Conferences for Undergraduate Women in Physics](#)

Full Presentation List**Invited talks**

- | | |
|--|----------------|
| 30. University of Michigan Colloquium,
<i>"Lumbering Giants & Nanohertz Unicorns"</i> | October, 2022 |
| 29. Oregon State University Colloquium,
<i>"Lumbering Giants & Nanohertz Unicorns"</i> | March, 2022 |
| 28. State University of New York Oswego Seminar,
<i>"Searching for Lumbering Giants"</i> | February, 2022 |
| 27. Gravitational Wave Physics and Astronomy Workshop Plenary,
<i>"Current Status of Pulsar Timing Array Gravitational Wave Astronomy"</i> | December, 2021 |
| 26. University of South Carolina Colloquium,
<i>"The Search for Lumbering Giants"</i> | December, 2021 |
| 25. Idaho State University Colloquium,
<i>"The Search for Lumbering Giants"</i> | October, 2021 |
| 24. Gravitational Wave Astronomy Northwest,
<i>"Pulsar Timing Array Gravitational Wave Astronomy Update"</i> | July, 2021 |

23. **Los Alamos National Lab,** April, 2021
"Searching for Nanohertz Gravitational Waves with a Galactic-Scale Detector"
22. **University of Missouri,** March, 2021
"Searching for Nanohertz Gravitational Waves with a Galactic-Scale Detector"
21. **Univ. of Wisc. Milwaukee, Center for Grav., Cosmo. and Astroph. Seminar,** February, 2021
"Doubling Down on Single Source Sensitivity"
20. **CERN Theory Colloquium,** January, 2021
"Highlights from the Search for Gravitational Waves in NANOGrav Datasets"
19. **Gravitational Wave Astronomy Northwest,** June, 2020
"Update on the search for gravitational waves in NANOGrav and IPTA datasets"
18. **LIGO Hanford Seminar,** March, 2020
"The Search for Lumbering Giants"
17. **American Astronomical Society 235th Meeting, NANOGrav Special Session,** January, 2020
"Highlights from the search for gravitational waves in NANOGrav datasets"
16. **Montana State University, Physics Colloquium,** November, 2019
"Exploring the discovery space of pulsar timing arrays with realistic sensitivity curves"
15. **Whitman College, Physics Colloquium,** October, 2019
*"The Search for Lumbering Giants:
Observing the Nanohertz Gravitational-Wave Sky with Pulsar Timing Arrays"*
14. **22nd International Conference on General Relativity and Gravitation (GR22)
& 13th Edoardo Amaldi Conference on Gravitational Waves (Amaldi13),** July, 2019
"Education and Public Outreach Efforts by Pulsar Timing Array Collaborations"
13. **Northwest APS Meeting,** May, 2019
*"The Search for Lumbering Giants:
Observing the Nanohertz Gravitational-Wave Sky with Pulsar Timing Arrays"*
12. **Gravitational Wave Physics and Astronomy Workshop,** December, 2019
"Current Status of Pulsar Timing Array Gravitational Wave Astronomy"
11. **University of Washington Bothell Physical Sciences Division Seminar,** December, 2018
"Observing the Nanohertz Gravitational-Wave Sky with Pulsar Timing Arrays"
10. **University of Washington Seattle AstroLunch Talk,** February, 2018
"A Galactic Scale Gravitational Wave Detector: The NANOGrav 11yr Limits"
9. **University of Washington Bothell Physical Sciences Division Seminar Seminar,** November, 2017
*"The NANOGrav Pulsar Timing Array:
Using simulations to characterize our galactic gravitational wave detector."*
8. **University of Texas Rio Grande Valley Arecibo Remote Command Center Meeting,** February, 2017
"Simulating Pulsar Signals for Noise Characterization of PTAs"
7. **University of Arkansas Physics Colloquium,** February, 2016
"Gravitational Wave Astronomy in the 2nd Century of GR"
6. **Western Washington University Physics Colloquium,** May, 2015
"A New Window into the Cosmos"
5. **Brigham Young University Physics Theory Seminar,** February, 2015
"Gravitational Gauge Theory and the Dark Cosmological Constituents"
4. **Georgia Tech Center for Relativistic Astrophysics, Departmental Colloquium,** March, 2013
"Biconformal Space & Testing Alternative Theories of Gravity using Multi-Messenger Astronomy"
3. **Utah State University Physics Colloquium,** February, 2013
"Best Practices for the Online Classroom"
2. **Utah State University Physics Colloquium,** September 2010
"Curved Phase Space from conformal symmetry"
1. **Oregon State Physics Colloquium,** March 2009
"Spherical Shells in a Schwarzschild Background"

Contributed presentations.....

44. *NANOGrav 15-year Detector Characterization Analysis*
NANOGrav Fall Meeting, Milwaukee, October, 2022
43. *Noise Budget for the NANOGrav Pulsar Timing Array*
American Physical Society April Meeting , New York City, April, 2022
42. *NANOGrav 15-year Dataset Noise Update*
NANOGrav Spring Meeting, New York City, March, 2022
41. *Full PTA Advanced Noise Modeling Update*
NANOGrav Fall Meeting, Virtual/Nashville TN, October, 2021
40. *Comparing Single-Source Statistics for PTA Observing Strategies*
American Physical Society April Meeting, Virtual, April, 2021
39. *Doubling Down on Single Source Sensitivity*
American Astronomical Society Meeting, Virtual, January, 2021
38. *Model Dependence of Bayesian Gravitational Wave Background Statistics in PTAs*
International Pulsar Timing Array Meeting, Virtual, September, 2020
37. *Predicting NANOGrav's Sensitivity into the future with *hasasia**
American Physical Society April Meeting, Virtual, April, 2020
36. *Exploring the Nanohertz Gravitational-Wave Discovery Space with Sensitivity Curves and *hasasia**
American Astronomical Society Meeting, Honolulu, HI, January, 2020
35. *Gravitational Wave Astronomy with the NANOGrav Pulsar Timing Array*
Texas Symposium on Relativistic Astrophysics, Portsmouth, UK, December, 2019
34. *Modeling Astrophysical Noise Sources in PTAs*
Fall NANOGrav Meeting, Ithaca, NY, October, 2019
33. *Realistic Pulsar Timing Array Sensitivity Curves*
GR22/Amaldi13, Valencia, Spain, July, 2019
32. *Pulsar Timing Array Sensitivity Curves*
American Physical Society April Meeting, Denver, Colorado, April, 2019
31. *Characterizing the Sensitivity of the NANOGrav 11-year Data Set*
Spring NANOGrav Meeting, Bothell, Washington, March, 2019
30. *Bayesian Monitoring of Solar Electron Density Using NANOGrav Data sets*
American Astronomical Society Meeting, Seattle, Washington, January, 2019
29. *Bayesian Monitoring of the Solar Wind with Pulsar Timing Arrays*
AstroNWxSW, Vancouver, British Columbia, November, 2018
28. *Spurious Gravitational Wave Detections in the NANOGrav 11 Year Data Set*
Fall NANOGrav Meeting, Green Bank, West Virginia, October, 2018
27. *The International Pulsar Timing Array Mock Data Challenge*
LISA Symposium, Chicago, Illinois, July, 2018
26. *Evolution of the Detection Statistics in the NANOGrav Dataset*
International Pulsar Timing Array Meeting, Albuquerque, New Mexico, June, 2018
25. *Noise Evolution in the NANOGrav 11 Year Data Set*
Northwest Section APS Meeting, Tacoma, Washington, June, 2018
24. *Publishing a Gravitational Wave Stochastic Background Analysis*
Python in Astronomy, New York, New York, May, 2018
23. *Slicing the NANOGrav 11 Year Data Set*
American Physical Society April Meeting, Columbus, Ohio, April, 2018
22. *Evolution of the NANOGrav 11 Year Data Set*
Spring NANOGrav Meeting, Charlottesville, Virginia, March, 2018

21. *Slicing the NANOGrav 11 Year Data Set*
Fall NANOGrav Meeting, Easton, Pennsylvania, October, 2017
20. *The NANOGrav pulsar signal simulator*
International Pulsar Timing Array, Sèvres, France, July, 2017
19. *Late-time quadrupolar gravitational wave power in de Sitter space*
American Physical Society April Meeting, Washington, DC, January, 2017
18. *Null Stream Approach with PTAs: Noise Characterization and Excess Power*
American Astronomical Society 227th Meeting, Grapevine, Texas, January, 2017
17. *Assessing the null stream approach for source localization in PTAs*
Fall NANOGrav Meeting, Urbana, Illinois, October, 2016
16. *Comparing transverse-traceless decompositions of symmetric tensors*
Int. Soc. for General Relativity and Gravitation 21st Meeting, New York City, New York, July, 2016
15. *Null Stream Approach for finding Sky Position of Pulsar Timing Array sources*
American Physical Society April Meeting, Salt Lake City, Utah, April, 2016
14. *A Cartan Geometry approach to the AdS/CFT*
Midwest Gravity Meeting, Evanston, Illinois, October, 2015
13. *Tracing the AdS/CFT Degrees of Freedom using Cartan Geometry*
American Physical Society April Meeting, Baltimore, Maryland, April 2015
12. *Conformal gravity, dark matter and time*
Midwest Gravity Meeting, Rochester, MI, November, 2014
11. *Conformal gravity, dark matter and time*
APS Four Corners Meeting, Orem, Utah, October 2014
10. *Time from the conformal symmetries of a Euclidean space*
Midwest Gravity Meeting, Milwaukee, Wisconsin, October 2013
9. *Lorentzian geometry from the conformal symmetries of a Euclidean space*
Loops 13: International Conference on Quantum Gravity, Waterloo, Canada, July 2013
8. *Testing Bimetric and Massive Gravity Theories using Multi-Messenger Astronomy*
GR20/AMALDI 10, Warsaw, Poland, July 2013
7. *Lorentzian spin connection from the conformal symmetries of a Euclidean space*
53rd Cracow School of Theoretical Physics, Zakopane, Poland, June 2013
6. *General relativity in signature changing phase space*
Pacific Coast Gravity Meeting, Davis, California, March 2013
5. *General relativity in phase space with a natural notion of time*
Pacific Coast Gravity Meeting, Santa Barbara, California, March 2012
4. *A systematic construction of curved phase space: A gravitational gauge theory with symplectic form*
Loops 11: International Conference on Quantum Gravity, Madrid, Spain, May 2011
3. *Quantum gravity in relativistic phase space*
Intermountain Graduate Research Symposium, Logan, Utah, March 2010
2. *Multiple Spherical Shells in Schwarzschild Spacetime*
12th Marcel Grossman Gravity Meeting, Paris, France, July 2009
1. *Single Spherical Shells in Schwarzschild Spacetime*
Pacific Coast Gravity Meeting, Eugene, Oregon, March 2009

Posters.....

3. *The NANOGrav Pulsar Signal Simulator*
American Astronomical Society Meeting, Honolulu, HI, January, 2020
2. *Pulsar Timing Array Source Location Using the Null Signal Approach*
American Astronomical Society 225th Meeting, Seattle, Washington, January 2015
1. *Multiple Spherical Shells in Schwarzschild Spacetime*
TEXAS Symposium on Relativistic Astrophysics, Vancouver, Canada, December 2008