Tyler Cohen

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EDUCATION

Ph.D, Astrophysics   Expected May 2026
New Mexico Inst. of Mining and Technology, Socorro, NM
Thesis: *Optimizing Pulsar Timing Arrays Using Pulsar Population Synthesis*

Bachelor of Science, Physics & Astronomy
Stony Brook University, Stony Brook, NY   Received May 2016

RESEARCH INTERESTS

Main Field: Observational Astrophysics
Specific Interests: Pulsar-timing, Gravitational Waves, Cosmology, Fast Radio Transients, Gamma-Ray Bursts, Inter-Stellar Medium

PROFESSIONAL & RESEARCH EXPERIENCE

Physics Research Assistant, New Mexico Inst. of Mining and Technology   Sept. 2024 –
Grote Reber Doctoral Fellow, National Radio Astronomy Observatory
                                                                                 June 2022 - Aug. 2024
Physics Research Assistant, New Mexico Inst. of Mining and Technology
Advisor: Paul Demorest   Aug. 2018 - May 2022

- Monte Carlo simulations and Bayesian inference of millisecond-period pulsar populations
- Radio telescope observations and analysis of high-time resolution pulse arrival time data

Physics Teaching Assistant, New Mexico Inst. of Mining and Technology
Supervisor: Carlos Lopez-Carrillo   Aug. 2017 - May 2018

- Worked problem sets with 25-student sections for introductory mechanics and electromagnetism.
- Instructor of 16-student sections for introductory electromagnetism lab

Research Intern, Gemini North Observatory   Oct. 2016 - Feb. 2017
Advisors: Inger Jørgensen and Kristin Chiboucas

- Data reduction and statistical analysis of Hubble Space Telescope photometric data in Python and IRAF to determine properties of galaxy clusters

Undergraduate Research Assistant, Stony Brook University   2014 - 2016
Advisor: Frederick Walter

- Applied methods of statistical regression analysis in IDL to model photometric nova curves

REU Research Assistant, Arecibo Observatory   Summer 2015
Advisors: Chris Salter and Tapasi Ghosh

- Wrote data-processing pipeline in IDL to probe over 1800 hours of time, frequency, and polarization data for astronomical signals
- Tested/debugged FORTRAN pipeline to distinguish astronomical signals from interference

PUBLIC OUTREACH EXPERIENCE

Youtube.com/@FringesAstro   June 2023 –

- Write, film, animate, and edit educational videos about esoteric concepts in physics and astronomy

Freelance Script Fact-checker, *Complexly*   Jan. 2023 - Apr. 2023

- Analyzed educational video scripts for accuracy, scrutinize sources for credibility, and identify unsupported claims

Tour Guide, National Radio Astronomy Observatory, Socorro, NM
Supervisor: Judy Stanley, Summer Ash   Jan. 2018 - Nov. 2022

- Conducted guided tours for thousands of visitors at the Very Large Array
- Created, organized and conducted astronomy education and outreach programs for visitors to the Very Large Array and student groups

PROFESSIONAL DEVELOPMENT

Summer School in Statistics for Astronomers, Penn State University
Program Director: G. Jogesh Babu   June 1-5, 2021

- Attended lectures and computing activities on probability and inference, model selection, Bayesian analysis, machine learning, etc.

Dunlap Inst. Instrumentation Summer School, University of Toronto
Program Director: Bryan Gaensler   July 23-28, 2017

- Attended lectures and hands-on laboratory activities in development of optics, spectrographs and detectors for astronomy

COMPUTER SKILLS

Languages: Python, R, IRAF, IDL, FORTRAN, C++, HTML, LaTeX
Operating Systems: Linux, Apple OS X, Microsoft Windows

LEADERSHIP & AFFILIATIONS

Full Member, North American Nanohertz Observatory for Gravitational Waves   2019 –
President, Stony Brook University Astronomy Club   Fall 2015 - Spring 2016

- Organized outreach events for greater Long Island community
- Operated, maintained, and trained students on Stony Brook University's observatory including telescopes, CCDs, and spectrographs
- Managed a team of club cabinet members

Vice President, Stony Brook University Astronomy Club   Fall 2014 - Spring 2015
Secretary, Stony Brook University Astronomy Club   Fall 2013 - Spring 2014

American Astronomical Society Junior Member   November 2015 –
Westchester Amateur Astronomers   2009 - 2017

AWARDS & RECOGNITION
Thomas Jefferson Award for scientific outreach (Dept. of Physics & Astronomy, Stony Brook)
                                                                                   Spring 2016
Stony Brook Presidential Scholarship   2012 - 2016
Dean's List   Fall 2012, 2013, 2014

CONFERENCE ABSTRACTS

3. *Optimal Strategies for Characterizing the Gravitational Wave Background with Pulsar Timing Arrays.* T. Cohen, P. Demorest. BAAS, 306.03, 2023

2. *Predicting the Performance of Future Pulsar Timing Arrays.* T. Cohen, P. Demorest, K. Stovall. BAAS, 149.23, 2019

1. *A Search for Fast Radio Bursts in GALFACTS data.* T. Cohen, T. Ghosh, C.J. Salter. BAAS, 241.23, 2015

SELECTED TALKS & COLLOQUIA
Optimal Observing Strategies with DSA-2000. New Mexico Symposium, NRAO, Socorro, NM. November 21, 2025.
DSA-2000 Simulations and Projections. International Pulsar Timing Array Science Meeting, Caltech, Pasadena, CA. June 23, 2025.
MSP Profile Morphology. NANOGrav Science Meeting, University of Michigan, Ann Arbor, MI. October 9, 2024.
How to Dance Like a Gravitational Wave. Astronomical Society of the Pacific Meeting, virtual. August 24, 2024.
Predicting Future PTA MSP Populations. NANOGrav Science Meeting, Cornell University, Ithaca, NY. October 14, 2019.
Predicting the Performance of Future Pulsar Timing Arrays using Population Synthesis. International Pulsar Timing Array Science Meeting, National Center for Radio Astrophysics, Pune, IN. June 19, 2019.
An Analysis of the Millisecond Pulsar Population. NANOGrav Science Meeting, Green Bank Observatory, Green Bank, WV. October 17, 2018.
Predicting the Performance of Future Pulsar Timing Arrays. NRAO Summer Student Colloquium, National Radio Astronomy Observatory, Socorro, NM. August 8, 2018.
Predicting the Performance of Future Pulsar Timing Arrays. Physics Colloquium, New Mexico Inst. of Mining and Technology, December 7, 2017.
A search for Fast Radio Bursts in GALFACTS data. Astronomy and Astrophysics Seminar, Stony Brook University, October 7, 2015.
Searching for Fast Radio Bursts in GALFACTS data. REU Colloquium, National Astronomy and Ionosphere Center, Arecibo, Puerto Rico, August 7, 2015.

PUBLICATIONS
NOTE: Certain publications produced by the NANOGrav collaboration have all authors or a subset of the authors listed in alphabetical order. This ordering does not represent the proportion of contributions made to the papers. Publications that I have led or where I have made critical contributions are denoted by *.

4. *Liu, T., Cohen, T., McGrath, C., Demorest, P. B., & Vigeland, S. J. 2023, *Multi-messenger*

Approaches to Supermassive Black Hole Binary Detection and Parameter Estimation. II. Optimal Strategies for a Pulsar Timing Array, ApJ, 945, 78

3. Agazie, G., et al. 2023, *The NANOGrav 15 yr Data Set: Evidence for a Gravitational-wave Background*, The Astrophysical Journal Letters, 951, L8

2. Agazie, G., et al. 2023, *The NANOGrav 15 yr Data Set: Observations and Timing of 68 Millisecond Pulsars*, ApJ Letters, 951, L9

1. *Dolch, T., et al. 2021, *Deconvolving Pulsar Signals with Cyclic Spectroscopy: A Systematic Evaluation*, ApJ, 913, 98