

# Jacob Eli Turner

ORCID: 0000-0002-2451-7288

Email : jet0027@mix.wvu.edu

Mobile : +1-773-577-3964

## EDUCATION

---

- **West Virginia University** Morgantown, WV  
*Ph.D. in Physics*  
*Advisor: Maura McLaughlin* Aug 2018 - Aug 2023
- **Oberlin College** Oberlin, OH  
*B.A. with Honors in Physics*  
*Advisor: Dan Stinebring* Aug 2013 - May 2017

## 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. Bold and italicized titles indicate papers where I was the main contributor to the research effort. Papers where I have “\*” next to my name indicate that, while I was not first author, I made a significant contribution to the paper.

- ***A Simultaneous Dual-Frequency Scintillation Arc Survey of Six Bright Canonical Pulsars Using the Upgraded Giant Metrewave Radio Telescope***, **Turner, J. E.**, McLaughlin, M. A., Stinebring, D. R., and Joshi, B.C., 2022, Submitted
- *Searching for continuous Gravitational Waves in the second data release of the International Pulsar Timing Array*, Falxa, M., et al., (127 authors, including **Turner, J.**), 2023, MNRAS, stad812
- ***Scattering Delay Mitigation in High Accuracy Pulsar Timing: Cyclic Spectroscopy Techniques***, **Turner, J. E.**, Stinebring, D. R., McLaughlin, M. A., Archibald, A. M., Dolch, T., and Lynch, R. S., 2023, ApJ, 944, 191
- *Searching For Gravitational Waves From Cosmological Phase Transitions with the NANOGrav 12.5-year Dataset*, Arzoumanian, Z., et al., (64 authors, including **Turner, J. E.**), 2021, PRL, 127, 251302
- *The NANOGrav 12.5-year data set: Search for Non-Einsteinian Polarization Modes in the Gravitational-Wave Background*, Arzoumanian, Z., et al., (71 authors, including **Turner, J. E.**), 2021, ApJL, 923, L22
- ***The NANOGrav 12.5-Year Data Set: Monitoring Interstellar Scattering Delays***, **Turner, J. E.**, et al. (36 authors), 2021 ApJ, 917, 10
- *The NANOGrav 12.5-year Data Set: Search For An Isotropic Stochastic Gravitational-Wave Background*, Arzoumanian, Z., et al. (61 authors, including **Turner, J. E.**), 2020, ApJ, 905, L34
- *The NANOGrav 11-Year Data Set: Evolution of Gravitational Wave Background Statistics*, Hazboun, J. S., et al. (63 authors, including **Turner, J. E.**), 2020, ApJ, 890, 108
- *The NANOGrav 11 yr Data Set: Limits on Gravitational Waves from Individual Supermassive Black Hole Binaries*, Aggarwal, K., et al. (63 authors, including **Turner, J. E.\***), 2019, ApJ, 880, 116
- *A Second Chromatic Timing Event of Interstellar Origin toward PSR J1713+0747*, Lam, M. T., Ellis, J. A., Grillo, G., Jones, M. L., Hazboun, J. S., Brook, P. R., **Turner, J. E.\***, et al. (37 authors), 2018, ApJ, 861, 132

## RESEARCH TALKS

---

- North American Nanohertz Observatory for Gravitational Waves Conference, “*Scattering Delay Mitigation in High Accuracy Pulsar Timing: Cyclic Spectroscopy Techniques*”, March 2023
- 241st American Astronomical Society Meeting, “*Characterizing and Mitigating Scattering Delays in Radio Observations of Pulsars*”, January 2023
- Green Bank Observatory, “*Correcting for Interstellar Scattering Delays in Millisecond Pulsars*”, November 2020
- North American Nanohertz Observatory for Gravitational Waves Conference, “*The NANOGrav 12.5-Year Data Set: Monitoring Interstellar Scattering Delays*”, October 2019
- International Pulsar Timing Array Conference, “*The NANOGrav 12.5-Year Data Set: Monitoring Interstellar Scattering Delays*”, June 2019
- Oberlin College, “*Detecting Gravitational Waves with Pulsars: Removing the Effects of the Interstellar Medium*”, April 2017

## POSTERS

---

- International Pulsar Timing Array Conference, “*The NANOGrav 12.5-Year Data Set: Monitoring Interstellar Scattering Delays*”, June 2018
- North American Nanohertz Observatory for Gravitational Waves Physics Frontiers Center Reverse Site Visit, “*Preliminary Continuous Wave Limits from NANOGrav 11-Year Dataset*”, October 2017
- North American Nanohertz Observatory for Gravitational Waves Physics Frontiers Center Reverse Site Visit, “*NANOGrav Timing Pipeline: Adding a Scattering Delay Correction*”, October 2017

## AWARDED GRANTS

---

- 2022: West Virginia University Eberly College of Arts & Sciences Travel Grant, *3V459 A. Keith and Sandra F. McClung Enrichment Endowment, \$600, Principal Investigator*

## SCHEDULED OBSERVATIONS

---

- Giant Metrewave Radio Telescope, 44\_035, *Examining the Relation Between Scintillation Arc Curvature and Asymmetry* (Observation PI)
- Giant Metrewave Radio Telescope, 40\_019, *Scintillation Arcs and Dispersion Measure Changes: A Follow-up to Pilot Observations* (Observation PI)
- Green Bank Observatory, GBT20A-588, *A Cyclic Spectroscopy Pilot Program: Baseband Observations of Three MSPs*
- Giant Metrewave Radio Telescope, 38\_041, *Scintillation Arcs and Dispersion Measure Changes: A Pilot Project* (Observation PI)

## PROFESSIONAL EMPLOYMENT AND RESEARCH EXPERIENCE

---

- 2019–Present: Graduate Research Assistant  
Department of Physics & Astronomy, West Virginia University, Morgantown, WV
- 2018–2019: Graduate Teaching Assistant  
Department of Physics & Astronomy, West Virginia University, Morgantown, WV
- 2018: Visiting Scholar  
Eberly College of Arts and Sciences, Department of Physics and Astronomy, West Virginia University, Morgantown, WV
- 2017: Research Analyst  
North American Nanohertz Observatory for Gravitational Waves/Center for Gravitation, Cosmology, and Astrophysics, College of Letters and Sciences, University of Wisconsin-Milwaukee, Milwaukee, WI
- 2016: Summer Researcher  
Visiting Undergrad Research Program, California Institute of Technology, Pasadena, CA
- 2017: Drop-in Tutor  
Department of Physics & Oberlin College, Oberlin OH
- 2015: Undergraduate Teaching Assistant  
Department of Physics & Astronomy, Oberlin College, Oberlin OH

## ORGANIZATIONS

---

- North American Nanohertz Observatory for Gravitational Waves (NANOGrav): *Full Member*

## TEACHING EXPERIENCE

---

- 2019: Graduate Teaching Assistant, West Virginia University: *PHYS 102L: Introductory Physics 2 Laboratory*
- 2018: Graduate Teaching Assistant, West Virginia University: *PHYS 101L: Introductory Physics 1 Laboratory*
- 2017: Drop-in Tutor, Oberlin College: *PHYS-068: Energy Science & Technology*
- 2015: Undergraduate Teaching Assistant, Oberlin College: *Physics 104: Elementary Physics II Laboratory*

## STUDENT RESEARCH MENTORSHIP SUPERVISION

---

- 2021–Present: Pulsar Science Collaboratory Research Team Leader: Scintillation Measurement Project

## OUTREACH

---

- 2020–Present: Skype A Scientist (over 15 talks given to various elementary, middle, and high schools)

## SKILLS

---

- **Programming Languages:** Python, Bash, C shell, Unix/Linux
  - **Scientific Python Packages:** Numpy, Scipy, Matplotlib, Astropy, PyCyc, Scintools, Pypulse
- **Software Packages:** Simulink,  $\text{\LaTeX}$ , TEMPO/TEMPO2, PSRCHIVE, DSPSR, Slurm, Jupyter/IPython

## HONORS AND AWARDS

---

- John Frederick Oberlin Scholarship, 2013