

NANOGrAV FALL 2024 COLLABORATION MEETING

HELD AT THE UNIVERSITY OF MICHIGAN

OCTOBER 7th – 9th

Schedule updated: October 8th, 2024

All times are listed in Eastern Daylight Time (UTC -4 Hours)

Monday, October 7th

9:00 – 9:15 AM

Welcome Address

Presented by Kayhan Gultekin, Chair of the LOC

9:15 – 10:45 AM

Session 1: Pulsar Timing & Planning for the Future

Chair: Jeffrey Hazboun and Deborah Good

- *Dynamically Combining PTA Datasets*, Rutger van Haasteren
- *CHIME-o-Grav: Wideband Edition*, Gabriella Agazie
- *Cyber-Infrastructure & You: Examining the New NANOGrav Era*, Joe Glaser
- *PINT: Maximum-likelihood Estimation of Pulsar Timing Noise Parameters*, Abhimanyu Susobhanan
- *Proper Motion Measurement of Radio-quiet Pulsars using Gamma-ray Single Protons*, Deven Bhakta
- *International Pulsar Timing Array (IPTA) Update*, Megan DeCesar

10:45 – 11:10 AM

Coffee Break

11:10 – 11:30 AM

Session 2: NG20 Talk + Q&A

Chair: Michael Lam

This discussion will focus primarily on the current progress towards the early release version of the NG20 data-set as well as a discussion regarding current workflows and people-power requirements.

11:30 – 12:00 PM

Speed Networking Session

Chair: Olivia Young

12:00 – 1:00 PM

Lunch

1:00 – 2:15 PM

Session 3: Astrophysics I

Chair: Joe Simon and Patrick Meyers

- *Update on Targeted Searches for SMBHBs using the 15yr Dataset*, Bjorn Larsen
- *Searching for Exotrojans around Millisecond Pulsars*, Jackson Taylor
- *Why You Should Care About Accelerations*, Tom Donlon
- *A Fast Joint Analysis for Individual SMBHBs and Stochastic Signals using a Pseudo-Fourier Basis*, Aiden Gundersen & Niel J. Cornish
- *Improved GWB Spectrum Likelihoods*, Ken Olum

2:15 – 2:30

15-Minute Recess

Monday, October 7th (*Continued*)

2:30 – 3:30 PM

Session 4: Astrophysics II

Chair: Luke Kelley and Heling Deng

- *Solving the PTA Data Analysis Problem with a Global Gibbs Scheme*, Nima Laal
- *Studying Deviations from a Power Law PSD using the T-Process*, Shashwat Sardesai
- *How to Detect an Individual SMBHB System in the Presence of a Gravitational Wave Background*, Caitlin Witt
- *Flexible Spectral Models for PTA*, Patrick Meyers

3:30 – 4:00 PM

Coffee Break

4:00 – 5:00 PM

Session 5: DSA 2000 & Strategic Planning Discussion

Chair: Jim Cordes

This session will feature an update on the current status of DSA 2000 and continue the discussions that have been present in the Strategic Planning Meetings, which restarted in Fall 2024.

5:00 – 5:30 PM

Session 5A: Senior Membership Discussion

Chair: Adam Brazier and David Nice

Evening / TBD

Graduate Student Meet-Up

Organizer Olivia Young

An informal gathering of graduate students physically attending the conference to meet each other and discuss various topics while exploring Ann Arbor.

Tuesday, October 8th

9:00 – 9:45 AM

Session 6: Continuous Waves and Pulsar Astrometry

Chair: Andrea Lommen and Nima Laal

- *CW Constraints and Forecasts*, Emiko Gardiner
- *NG 15yr Targeted Searches: Updates on NGC3115 and Other Radio Galaxy Candidates*, Nikita Agarwal
- *Improved Timing with VLBI Pulsar Astrometry*, Sophia Sosa

9:45 – 10:30 AM

Session 7: Lightning Talks for Poster Presenters

Chair: Joe Glaser

Those who have contributed posters to the Conference will give a single-slide summary to spotlight their research for our attendees. Each presenter is afforded 2 minutes total per poster submission.

10:30 – 11:00 AM

Coffee Break

Tuesday, October 8th (Continued)

11:00 – 12:00 PM

Poster Viewing Session

Chair: Joe Glaser

- *Autonomous Navigation Using Occultations of Bright X-Ray Sources*, Allen Gift
- *Interpretation of DM variations of MSPs in NANOGrav 15yr dataset*, Anala Kavumkandathil Sreekumar
- *SGR 1935: Magnetar or More?*, Anna Passey
- *The Impact of Hardening Time on GWB Parameters using the Horizon Run 5 Simulation*, Claire Jones
- *Serendipitous Occultations in HEAO1 Mission*, Ishan Deb
- *Data Combination for EDR3: Changes & Challenges*, Jamison Talley
- *Variance in PTA Sensitivity Curves due to Uncertainty in GWB Recovery*, Kyle Gourlie
- *Single Pulse X-Ray Crab Study*, Margot Ferris
- *Replicating the 15 Year Dataset With a Minimum Population of SMBHBs*, Mary Smith
- *Supporting a lunar telescope: Calculating the pointing direction of the Lunar Farside Technosignature and Transient Telescope (LFT3)*, Kaia Reenock
- *Constraining solar emission radius at 42 MHz during the 2024 total solar eclipse using a student-commissioned radio telescope*, Olivia Young
- *Recoiling massive black holes binary and triple systems in cosmological simulations*, Pranav Satheesh
- *An Update on the GBT Cyclic Spectroscopy Backend*, Ross Jennings
- *GREENBURST: Finding New FRBs and Pulsars through Single Pulses*, Susannah Paine
- *Cosmic Clocks: A PTA-Focussed Planetarium Film*, Susannah Paine
- *Searching for Bow-Shock Pulsar Wind Nebulae in Archived Datasets*, Tim Dolch
- *A Bow-Shock Pulsar Wind Nebula Search in Deep Images*, Tim Dolch
- *Giant Pulses: Single Pulse Search on Pulsar J1713+0747*, Tim Dolch
- *Analyzing Lunar Terrain Effects on Orbital Altitudes*, Zenas Boamah
- *Automating Pulsar Bowshock Discovery: A Python-Powered Solution for Streamlined Sorting and Multi-Survey Image Analysis*, Benjamin Bassett

12:00 – 1:00 PM

Lunch

1:00 – 2:15 PM

Preparing to Work with Native American Communities

Invited Speaker: Bethany Hughes

Chair: Dustin Madison

Bethany Hughes is a Core Faculty member in the Native American Studies Program at the University of Michigan and an Assistant Professor in the Department of American Culture. She is a cultural historian and performance scholar who focuses on Native American representation, contemporary Indigenous performance, and critical analysis of cultural production. She is a co-PI on the 1817 Project at UM, researching Native American student experience and activism and institutional response across the 20th and 21st centuries.

Tuesday, October 8th (*Continued*)

2:15 – 3:30 PM

Session 9: Noise Budget I

Chair: Maura McLaughlin and Gabriella Agazie

- *The Pulsar Science Collaboratory: Multi-Epoch Scintillation Studies*, Jacob Turner
- *Constraining Turbulence within Galactic Halos with FRB 20200120E*, Sashabaw Niedbalski
- *The NANOGrav 15yr Dataset: Customized Chromatic Noise Models*, Jeremy Baier
- *Probing Interstellar Turbulence and Precision Pulsar Timing with PSR J1903+0327*, Abra Geiger
- *Single Pulse Studies of J1713+0747*, Natalia Lewandowska

3:30 – 4:00 PM

Coffee Break

4:00 – 5:30 PM

(Full Members Only) The Next PFC Discussion

Speaker: Sarah Vigeland

Overview of the National Science Foundation's Physics Frontiers Center (PFC) program and what we know about the next PFC proposal cycle. In addition, we'll have an open discussion of plans for NANOGrav's proposal covering a variety of topics directed by attendees.

4:00 – 5:30 PM

Tour of the Detroit Observatory

1398 E. Ann Street (Entrance on Observatory St)

The Detroit Observatory was built in 1854 and quickly became the centerpiece of scientific advancement at U-M. It housed precision instruments such as the Fitz and Meridian telescopes, through which astronomers made groundbreaking discoveries. The Detroit Observatory transformed U-M into a world-class research institution. This tour covers both the original building and the addition. Learn about the telescopes, see why the observatory was constructed the way it was, hear about the astronomers who walked its floors in the 19th century — and the discoveries they made — and understand what we hoped to gain by construction of the addition.

6:00 – 9:00

Conference Banquet

Our annual conference banquet will be at **The Greyline (100 N Ashley St, Ann Arbor, MI 48104)**. The menu will feature a wide range of buffet style appetizers, entrees, and deserts which covers the diverse dietary restrictions of our members. In addition, the banquet will feature a card-only cash bar featuring their full selection of Michigan brewed beers, house wines, and assorted sodas.

Wednesday, October 9th

- 9:00 – 10:15 AM **Session 11: Noise Budget II + New Physics**
Chair: Joe Lazio and Joe Glaser
– TBD, Michael Lam
– MSP Profile Morphology, Tyler Cohen
– Harmonic Analysis of NANOGrav 15yr Dataset, Jonathan Nay
– Running of the Spectral Index, Kai Schmitz
– CMB and Energy Conservation Limits on Nanohertz Gravitational Waves, David Wright
- 10:15 – 10:45 AM **Coffee Break**
- 10:45 – 11:45 **Session 12: Astrophysics III**
Chair: Laura Blecha and Bjorn Larsen
– Insights into SMBH-Galaxy Co-Evolution From the Gravitational Wave Background, Cayenne Matt
– Echoes from the Core: Constraints on the Supermassive Black Hole Binary Population from Core Galaxy Properties, C.J. Harris
– Bayesian Spectral Characterization of AGN time-series, Alberto Diaz Hernandez
– Comparing Black Hole Mass Scaling Relations for SDSS Galaxies, Maggie Huber
- 11:45 – 12:30 PM **Closing Remarks + Lunch**

Funding for this collaboration meeting has been provided by the National Science Foundation's Award #2020265. NANOGrav is very grateful to the University of Michigan's Department of Astronomy for hosting the NANOGrav Fall 2024 Collaboration Meeting.

Special thanks to the members of the Local Organizing Committee (LOC) and Scientific Organizing Committee (SOC): Kayhan Gultekin (LOC Chair), Tim Dolch (SOC Chair), Shannon Abelson (SOC), Joe Glaser (LOC+SOC), C.J. Harris (LOC), Ross Jennings (SOC), Holly Legleiter (LOC), Cayenne Matt (LOC), Margaret Mattson (LOC), Bradley Meyers (SOC), Joris Verbiest (SOC), Jason Ybarra (SOC), and Olivia Young (LOC+SOC).

The University of Michigan is located on the traditional territory of the Anishinaabe people. In 1817, the Ojibwe, Odawa, and Bodewadami Nations made the largest single land transfer to the University of Michigan. This was offered ceremonially as a gift through the Treaty at the Foot of the Rapids so that their children could be educated. Through these words of acknowledgment, their contemporary and ancestral ties to the land and their contributions to the university are renewed and reaffirmed.