

## EDUCATION

- Yale University**, New Haven, CT Expected Graduation 2025
- Bachelor of Science in Astrophysics and Mathematics, Certificate in Japanese; Cumulative GPA 4.00
  - Relevant Coursework:*
    - Astronomy:* Interstellar Matter and Star Formation, Astrophysical Flows, The Evolving Universe, Radio Astronomy, Research Methods in Astrophysics, Stars and Their Evolution, Expanding Ideas of Time and Space
    - Physics:* Nuclear and Particle Physics, Quantum Mechanics, Electromagnetic Fields and Optics, Classical Mechanics, Quantum Information Processing and Communication, Modern Physical Measurement Laboratory, Intensive Introductory Physics
    - Mathematics:* Fields and Galois Theory, Ordinary Differential Equations, Abstract Algebra, Advanced Probability, Discrete Mathematics, Vector Calculus and Linear Algebra
  - Honors:* Phi Beta Kappa Junior Inductee, Richard U. Light Fellow
- International Christian University**, Mitaka, Tokyo, Japan August 2023 – June 2024
- One-year study abroad program (Middlebury in Japan), funded by The Richard U. Light Fellowship for Language Study in East Asia

## RESEARCH EXPERIENCE

- National Astronomical Observatory of Japan**, Mitaka, Tokyo, Japan August 2023 – Present  
*Research Assistant*, Advisors: Drs. Kazunori Akiyama (MIT), Shiro Ikeda (ISM), Mareki Honma (NAOJ)
- Developing regularized maximum likelihood methods for movie reconstruction of Event Horizon Telescope data
- National Radio Astronomy Observatory**, Socorro, NM May 2023 – Present  
*NRAO NSF REU Intern*, Advisors: Drs. Juergen Ott (NRAO), Brian Svoboda (NRAO), and David Meier (NMT)
- Utilizing ALMA data to measure the physical and kinematic properties of molecular gas potentially feeding the Central Molecular Zone
- Berkeley SETI Research Center**, Berkeley, CA June 2022 – Present  
*Breakthrough Listen NSF REU Intern*, Advisors: Drs. James Davenport (UW) and Steve Croft (UCB)
- Constrained technosignature candidate searches in scheduled observations and archival data using geometric signaling and receiving frameworks, utilizing high-precision astrometric and photometric data from Gaia Data Release 3
  - Working on a classification algorithm to process alerts from LSST, with current testing based on the ELAsTiCC light curve simulations
- Breakthrough Listen Intern*, Advisor: Dr. Clement Vidal
- Studying potential close encounters between spider pulsars and nearby stars as a possible technosignature in the form of goal-directed activity
- Yale Department of Physics**, New Haven, CT November 2020 – Present  
*Research Assistant*, Advisor: Dr. Nikhil Padmanabhan
- Analyzed quasar data from the SDSS eBOSS catalogue using the quadratic maximum likelihood estimator to provide a measurement of the 1D Ly- $\alpha$  forest power spectrum that aligns well with previous power spectrum results
  - Using a neural network to learn the evolution of the linear point of the BAO feature in the two-point correlation function
- University of Arizona Department of Astronomy**, Tucson, AZ May 2019 – March 2020  
*Research Assistant*, Advisor: Dr. Daniel Apai
- Developed a program to calculate which TESS Earthlike exoplanet candidates were observable during their projected transits from nine different telescopes in order to perform follow-up analyses
- University of California, San Diego Physics Department**, San Diego, CA May 2018 – March 2020  
*Research Assistant*, Advisor: Dr. Brian Keating
- Helped design and construct affordable and easily reproducible linear and circular polarimeters

## PUBLICATIONS

- Nilipour, A.**, Davenport, J., Croft, S., & Siemion, A. “Signal Synchronization Strategies and Time Domain SETI with Gaia DR3.” *The Astronomical Journal* 166, 79 (2023)
- Davenport, J., Sheikh, S., Farah, W., **Nilipour, A.**, Cabrales, B., Croft, S., Pollak, A., Siemion, A. “Real-time Technosignature Strategies with SN 2023ixf.” *Research Notes of the AAS* 7, 120 (2023)

## TALKS

- National Radio Astronomy Observatory Research Symposium (August 2023, Socorro, NM):** “Feeding the Central Molecular Zone”
- 241<sup>st</sup> Meeting of the American Astronomical Society (January 2023, Seattle, WA):** “Signal Synchronization Strategies and Time Domain SETI with Gaia DR3”
- Berkeley SETI Research Center Symposium (August 2022, Berkeley, CA):** “Signal Synchronization Strategies and Time Domain SETI with Gaia DR3”

## POSTER PRESENTATIONS

- **242<sup>nd</sup> Meeting of the American Astronomical Society (June 2023, Albuquerque, NM):** “Linear Point Standard Ruler Estimation with Neural Networks”
- **NASA CT Space Grant Consortium Fall Grants Expo (November 2022, Hartford, CT):** “Bouchet Low-Earth Alpha/Beta Space Telescope (BLAST)”
- **240<sup>th</sup> Meeting of the American Astronomical Society (June 2022, Pasadena, CA):** “One-dimensional Lyman- $\alpha$  forest power spectrum estimate from eBOSS”

## ACTIVITIES

- NAOJ Mitaka Open House Day Volunteer** August 2023 – September 2023
- Assisting with the development and presentation of an interactive Milky Way 21cm line exhibit, including the construction of a simple horn antenna
- Yale Undergraduate Aerospace Association (YUAA), Team Leader** September 2021 – June 2023
- Leader of the cosmic ray detector team of the YUAA CubeSat project, which has a projected launch date in spring 2024 and will detect variations in the Van Allen radiation belt, with the primary objective of mapping the boundaries of the South Atlantic Anomaly

## WORK EXPERIENCE

- Teaching Fellow** for Elementary Japanese II January 2023 – June 2023
- Grader** for Discrete Mathematics September 2022 – June 2023

## SKILLS

- **Data Analysis Experience:** Event Horizon Telescope (EHT), Atacama Large Millimeter/sub-millimeter Array (ALMA)
- **Astronomical Packages:** CASA, CARTA, GNU Radio
- **Computational:** Python, Julia, PyTorch, Git, Qiskit, MATLAB, C#, LaTeX

## MEMBERSHIP

- **Event Horizon Telescope Collaboration** 2023 – Present
- **Phi Beta Kappa** 2022 – Present
- **American Astronomical Society** 2021 – Present

## PRESS

- **The Economist:** [\*Ideas for finding ET are getting more inventive\*](#) 18 January 2023
- **YaleNews:** [\*Searching for extraterrestrial life – by keeping an eye on exploding stars\*](#) 31 July 2023

## REFERENCES

**Nikhil Padmanabhan**, Associate Professor of Physics and Astronomy, Yale University

- [nikhil.padmanabhan@yale.edu](mailto:nikhil.padmanabhan@yale.edu)

**Héctor Arce**, Professor of Astronomy, Yale University

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**James Davenport**, Research Assistant Professor of Astronomy, University of Washington

- [jrad@uw.edu](mailto:jrad@uw.edu)

**Juergen Ott**, Research Scientist, National Radio Astronomy Observatory

- [jott@nrao.edu](mailto:jott@nrao.edu)

**Kazunori Akiyama**, Research Scientist, Massachusetts Institute of Technology Haystack Observatory

- [kakiyama@mit.edu](mailto:kakiyama@mit.edu)

