Pranav Nagarajan

Division of Physics, Math, and Astronomy
California Institute of Technology
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Education

California Institute of Technology — Pasadena, CA
Ph.D. in Astrophysics — *2022-Present*
Advisor: Kareem El-Badry — GPA: 4.2 / 4.0

University of California, Berkeley — Berkeley, CA
B.A. in Astrophysics, Physics, and Data Science — *2018-2022*
Advisor: Dan Weisz — GPA: 4.0 / 4.0

Research Experience

Graduate Student Researcher — California Institute of Technology
Advisor: Prof. Kareem El-Badry — *2022 - Present*

- Discovering and Characterizing Stellar-Mass Black Holes and Neutron Stars in Galactic Binaries

Undergraduate Student Researcher — University of California, Berkeley
Advisor: Prof. Daniel Weisz — *2020 - 2022*

- Mapping the Local Group with RR Lyrae

BSRC Summer Internship — Berkeley SETI Research Center
Mentor: Dr. Vishal Gajjar — *Summer 2021*

- Breakthrough Listen Periodic Spectral Signals Search

Undergraduate Research Apprenticeship Program — Space Sciences Laboratory
Mentor: Dr. Andreas Zoglauer — *2019 - 2021*

- Using 3D Convolutional Neural Networks and Graph Neural Networks for Compton Track Identification in Gamma-Ray Space Telescopes

Teaching Experience

Teaching Assistant — California Institute of Technology
High-Energy Astrophysics, Galaxies and Cosmology — *2024*

Undergraduate Student Instructor — University of California, Berkeley
Principles and Techniques of Data Science — *2020*

Honors & Awards

NSF Graduate Research Fellowship Program: Honorable Mention 2024
Highest Distinction in General Scholarship 2022
URAP Summer Award 2020
National Merit Scholarship 2018

Awarded Telescope Time

Palomar Hale 200-inch . . . . . 3 nights (PI) + 3 nights (Co-I)
Keck 10m . . . . . 5.5 nights (Co-I)

Observing Experience

Keck II Telescope, Near-Infrared Camera 2 – 1 night 2024
Keck II Telescope, Near-Infrared Echellete Spectrometer – 3 nights 2024
Very Large Telescope, Focal Reducer and Low Dispersion Spectrograph 2 – 1 night 2024
Magellan I Telescope, Inamori Magellan Areal Camera and Spectrograph – 1 night 2024
Palomar Hale Telescope, Wide-Field Infrared Camera – 2 nights 2024
Keck I Telescope, Low Resolution Imaging Spectrometer – 1 night 2024
Palomar Hale Telescope, Caltech High-speed Multi-color Camera – 1 night 2023
Palomar Hale Telescope, Double Spectrograph – 3 nights (PI) 2023
Keck II Telescope, Echellete Spectrograph and Imager – 1 night 2022

Journal Referee

MNRAS, ApJ, AJ, OJAp, ApJL . . . . . 5 papers total, 2023 – Present

Talks

Talk, Symbiotic stars conference, Prague, Czech Republic . . . . . Jun. 2024
Tea Talk, Observatories of the Carnegie Institution for Science, Pasadena, CA . . . . . May 2024
Talk, Stellar-Mass Black Holes Group Meeting, Pasadena, CA . . . . . Jan. 2024
Talk, Zwicky Transient Facility Team Meeting, Pasadena, CA . . . . . Oct. 2023
Talk, Zwicky Transient Facility Stellar Group Meeting, Pasadena, CA . . . . . Mar. 2023

Refereed Publications

6. **Nagarajan, P.**, El-Badry, K., Lam, Y. C., & Reggiani, H. (2024). The Symbiotic X-ray Binary IGR J16194-2810: A Window on the Future Evolution of Wide Neutron Star Binaries From Gaia. *Publications of the Astronomical Society of the Pacific, 136(7), 074202.*

5. **Nagarajan, P.**, El-Badry, K., Triaud, A. H., Baycroft, T. A., Latham, D., Bieryla, A., Buchhave, L. A., Rix, H.-W., Quataert, E., Howard, A., Isaacson, H., & Hobson, M. J. (2024). ESPRESSO Observations of Gaia BH1: High-precision Orbital Constraints and no Evidence for an Inner Binary. *Publications of the Astronomical Society of the Pacific, 136(1), 014202.*

4. **Nagarajan, P.**, El-Badry, K., Rodriguez, A. C., van Roestel, J., & Roulston, B. (2023). Spectroscopic follow-up of black hole and neutron star candidates in ellipsoidal variables from *Gaia* DR3. *Monthly Notices of the Royal Astronomical Society, 524(3), 4367–4383.*

3. El-Badry, K., Shen, K. J., Chandra, V., Bauer, E. B., Fuller, J., Strader, J., Chomiuk, L., Naidu, R. P., Caiazzo, I., Rodriguez, A. C., **Nagarajan, P.**, Yamaguchi, N., Vanderbosch, Z. P., Roulston, B. R., Gänsicke, B., Han, J. J., Burdge, K. B., Filippenko, A. V., Brink, T. G., & Zheng, W. (2023). The fastest stars in the galaxy. *The Open Journal of Astrophysics, 6.*

2. Suresh, A., Gajjar, V., **Nagarajan, P.**, Sheikh, S. Z., Siemion, A. P., Lebofsky, M., MacMahon, D. H., Price, D. C., & Croft, S. (2023). A 4–8 GHz Galactic Center Search for Periodic Technosignatures. *The Astronomical Journal, 165(6), 255.*

1. **Nagarajan, P.**, Weisz, D., & El-Badry, K. (2022). RR Lyrae-based distances for 39 nearby dwarf galaxies calibrated to *Gaia* EDR3. *The Astrophysical Journal, 932(1), 19.*