PRANAV H. PREMNATH

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EDUCATION

University of California, Irvine Sep 2022 – Present
Graduate Student, Department of Physics and Astronomy
M.S. in Physics (Dec 2024)
Ph.D. in Physics with concentration in Astronomy (Expected 2028)
Advisor: Dr. Paul Robertson

The University of Texas at Austin Sep 2017 – May 2021
B.S. in Astronomy and B.S. in Physics
Major GPA: 3.71
Overall GPA: 3.69

RESEARCH EXPERIENCE

Graduate Student Researcher (UC Irvine) Winter 2023 - Present
Transit Surface Reconstruction

- Use transiting exoplanets to retrieve spatially resolved stellar spectra, enabling detailed stellar surface mapping
- Wrote and led a successful observing proposal to use the Keck Planet Finder (KPF), securing time for high-resolution spectroscopy
- Lead simultaneous radial velocity and photometric observations with the Keck Planet Finder and TESS for two benchmark systems
- Developing a custom pipeline to analyze spectral line profile shifts across transit events, enhancing the precision of radial velocity measurements for small, temperate exoplanets

Research Assistant (SETI Institute) Fall 2021 - Summer 2022
Hat Creek Radio Observatory

- Served as primary operator of the Allen Telescope Array (ATA), developing and maintaining observing and data reduction scripts
- Led targeted radio observations of habitable-zone exoplanets in the galactic plane, using a newly tested backend to search for narrowband technosignatures
- Calibrated antenna pointing and system sensitivity, improving array performance for signal detection
- Contributed to several peer-reviewed publications, including Nature Astronomy (Bright et al. 2023)

Undergraduate Researcher (UT Austin) Summer 2020 - Spring 2021
Evidence for a Buried AGN in an Extremely Bright Dusty Galaxy at z=2

- Reduced Submillimeter Array (SMA) observations and constructed the spectral line energy distribution of a high-redshift starburst galaxy
- Extracted and analyzed spectral data channels, performing detailed statistical and error analysis
- Identified evidence for a dust-obscured Active Galactic Nucleus (AGN)
- Published a research note (Premnath et al. 2020b) and presented findings at the 237th AAS Meeting (January 2021)

Undergraduate Researcher (UT Austin) Summer 2019 - Spring 2020
Dynamical Masses of Young Stars Inferred from Two Transitions of CO with ALMA

- Measured masses of pre-main sequence stars using Atacama Large Millimeter Array (ALMA) observations of circumstellar disks
- Performed image analysis and signal processing with `CASA`, a Python-based data reduction software
- Identified discrepancies in inferred masses across different disk modeling approaches, informing the choice of models in future surveys
- Published a research note (Premnath et al. 2020a) and presented findings at the 235th AAS Meeting (January 2020)

TEACHING EXPERIENCE

PHY 3LB - Physics Lab for Life Science Majors Winter 2023-25, Summer 2023
Teaching Assistant (TA), UC Irvine

- Led lab sessions, addressed experiment-related questions, and graded lab reports
- Conducted and graded the final exam in Summer 2023
- Developed skills in effectively communicating complex physics concepts to non-majors

PHY 138 - Extragalactic Astrophysics Winter 2025
Teaching Assistant (TA), UC Irvine

- Conducted discussion sections and graded all homework assignments
- Administered weekly quizzes

PHY 61C - Introduction to Astrophysics Spring 2023-24
Teaching Assistant (TA), UC Irvine

- Led discussion sections and graded all homework and midterm exams
- Strengthened ability to connect homework problems to real-world astrophysics research

PHY 7LC - Physics Lab for Engineers Fall 2023
Teaching Assistant (TA), UC Irvine

- Led lab discussions and graded lab reports

LEADERSHIP EXPERIENCE

Physics Graduate Caucus, UCI Summer 2024 – Present
Administrator

- Represent the needs and concerns of over 100 Physics and Astronomy graduate students at the department, school, and university level through active participation in administrative meetings and committees
- Lead and organize regular graduate town halls to facilitate open dialogue between students and faculty, resulting in actionable improvements in TA support, advising transparency, and wellness resources
- Coordinate and host social, professional development, and wellness events to build community and foster inclusion across all graduate cohorts
- Serve as liaison between graduate students and departmental leadership, advocating for equitable policies around workload distribution, teaching assignments, and advisor expectations

Aspiring Allyship Group, UCI Spring 2024 – Present
Co-lead

- Co-founded and co-lead a peer discussion group of 10–15 graduate students focused on practicing active allyship within the Physics & Astronomy Department

- Designed and facilitated monthly meetings centered on curated readings, case studies, and personal experiences, fostering dialogue on anti-racism, gender equity, and inclusive mentorship
- Contributed to a growing departmental culture of accountability and inclusion by cultivating safe spaces for reflection, learning, and collective growth

Physics and Astronomy Community Excellence (PACE), UCI Fall 2023 – Present
Mentor

- Support first-year graduate students in their transition to graduate school through regular check-ins, guidance, and community-building
- Provide individualized mentorship to three upper-division undergraduates navigating the graduate school application process, including feedback on personal statements and career planning

HONORS AND AWARDS

UT Austin College of Natural Sciences Research Distinction Winner Spring 2021
University of Texas at Austin

Dr. Arnold Romberg Endowed Scholarship Fund Fall 2020 – Spring 2021
University of Texas at Austin

Karl G. Henize Endowed Scholarship Spring 2020
University of Texas at Austin

Darrell W. Moffitt, Jr. Endowed Presidential Scholarship Fall 2019 – Spring 2020
University of Texas at Austin

John W. Cox Endowment for Advanced Studies in Astronomy Summers 2019, 2020
University of Texas at Austin

University Honors (5 semesters) Fall 2017 – Spring 2021
University of Texas at Austin

PUBLICATIONS

First Author Publications

- **Premnath** et al. 2020, "Evidence for a Buried AGN in an Extremely Bright Dusty Galaxy at z = 2", *Research Notes of the AAS, Volume 4, Issue 10, id.173.*
- **Premnath** et al. 2020, "Dynamical Masses of Young Stars Inferred from Two Transitions of CO with ALMA", *Research Notes of the AAS, Volume 4, Issue 7, id.100.*

Other Contributions

- Beard et al. 2025, "Jitter Across 15 yr: Leveraging Precise Photometry from Kepler and TESS to Extract Exoplanets from Radial Velocity Time Series", *The Astronomical Journal, Volume 169, Issue 2, id.149, 92 pp.*
- Crossfield et al. 2025, "OrCAS: Origins, Compositions, and Atmospheres of Sub-Neptunes. I. Survey Definition", *The Astronomical Journal, Volume 169, Issue 2, id.89, 15 pp.*
- Kroft et al. 2025, "A Pair of Dynamically Interacting Sub-Neptunes Around TOI-6054", *arXiv:2501.09095.*
- Sheikh et al. 2024, "Correction to: Characterization of the repeating FRB 20220912A with the Allen Telescope Array", *MNRAS, Volume 534, Issue 3, pp.1949–1949.*
- Beard et al. 2024, "Utilizing Photometry from Multiple Sources to Mitigate Stellar Variability in Precise Radial Velocities: A Case Study of Kepler-21", *The Astronomical Journal, Volume 168, Issue 4, id.149, 17 pp.*
- Joshi et al. 2024, "Wideband detection of FRB 20240114A above 2 GHz with the Allen Telescope Array", *The Astronomer's Telegram, No. 16599.*

- Sheikh et al. 2024, "Characterization of the repeating FRB 20220912A with the Allen Telescope Array", *MNRAS, Volume 527, Issue 4, pp.10425–10439.*
- Bright et al. 2023, "Precise measurements of self-absorbed rising reverse shock emission from gamma-ray burst 221009A", *Nature Astronomy, Volume 7, pp.986–995.*
- Sheikh et al. 2022, "Bright radio bursts from the active FRB 20220912A detected with the Allen Telescope Array", *The Astronomer's Telegram, No. 15735.*
- Perez et al. 2022, "Breakthrough Listen Search for the WOW! Signal", *Research Notes of the AAS, Volume 6, Issue 9, id.197.*

POSTERS AND PRESENTATIONS

Probing Stellar Surfaces using Transiting Exoplanets
Know Thy Star, Know Thy Planet 2 Conference — *Poster, February 2025*

Pilot SETI Survey with the Upgraded Allen Telescope Array
NExScI ExSoCal Meeting — *Poster, December 2023*

Technosignature Searches with the Allen Telescope Array
PSETI Symposium — *Presentation (with W. Farah), June 2022*

Evidence for a Buried AGN in an Extremely Bright Dusty Galaxy at z = 2
237th Meeting of the American Astronomical Society — *Poster, January 2021*

Dynamical Mass Measurement of a Young Star with ALMA
235th Meeting of the American Astronomical Society — *Poster, January 2020*

TECHNICAL STRENGTHS

Computer Languages	Python, Mathematica, Bash script
Packages	Astropy, Scipy, Numpy, Matplotlib, Seaborn, Pandas
Tools	Vim, VS Code, Atom, CASA, Microsoft Office

REFERENCES

Dr. Paul Robertson	paul.robertson@uci.edu
Dr. Wael Farah	wael.a.farah@gmail.com
Dr. Brendan P. Bowler	bpbowler@astro.as.utexas.edu
Dr. Justin Spilker	spilkerj@gmail.com