

JENNIE PAINE

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EDUCATION

Ph.D., Astrophysics, University of Colorado, Boulder May 2023
Thesis: *Probing the Dynamic Universe with the Motions of Stars and Galaxies*
Advisor: Prof. Jeremy Darling

M.S., Astrophysics, University of Colorado, Boulder Dec. 2018

B.S., Physics, *summa cum laude*, Virginia Tech May 2016
Minors: Astronomy and Mathematics

RESEARCH POSITIONS

Postdoctoral Research Associate, NASA Goddard / UMBC 2023 - Present

NSF Graduate Research Fellow, University of Colorado Boulder 2018 - 2023

Graduate Research Assistant, University of Colorado Boulder 2017 - 2023

NSF REU Research Student, Harvard-Smithsonian Center for Astrophysics 2015

Undergraduate Research Assistant, Virginia Tech 2014 - 2016

AWARDS AND HONORS

- NSF Graduate Research Fellowship 2018 - 2023
- Ben C. Parmenter Graduate Fellowship, CU Boulder Oct. 2021
- High Pass distinction on Master's Exam, CU Boulder Sept. 2018
- Chambliss Astronomy Achievement honorable mention, AAS June 2018
- Ray Mace Smith Graduate Fellowship, CU Boulder May 2018
- Sigma Xi Honor Society May 2018
- Sigma Pi Sigma Physics Honor Society April 2015
- Robert C. Richardson Scholarship, Virginia Tech Physics April 2015
- Wan-Zia Scholarship, Virginia Tech Physics April 2014
- Frank Leigh Robeson Scholarship, Virginia Tech Physics April 2013

AWARDED OBSERVING TIME

Principal Investigator:

Gravity in the Galactic Center: Precise Stellar Kinematics in the Inner Parsec, Paine, J. & Darling, J., VLA/22A-202, Priority grade A, 2.15 hours

3D Positions, Velocities, and Accelerations of SiO Masers in the Inner Parsec, Paine, J. & Darling, J., ALMA, Priority grade A, 0.9 hours

Co-Investigator:

Toward Direct Measurement of the Cosmological Acceleration, Darling, J., Paine, J., Roberts, H., & Bowyer, R., GBT/20B-148, 20 hours

Gravity in the Galactic Center: Precise Stellar Kinematics in the Inner Parsec, Darling, J. & Paine, J., VLA/19A-310, 2.25 hours

Atomic Clocks in Space: A Search for the Rubidium Hyperfine Maser, Darling, J. & Paine, J., GBT/17B-066, 7 hours

TEACHING EXPERIENCE

Graduate Instructor, University of Colorado Summer 2020

Taught ASTR 1000, The Solar System. Developed class materials for remote instruction and designed a unit on scientific literacy for non-STEM majors.

ISEE Professional Development Program Mar. - July 2019

Intensive program on inclusive education and professional development training. Co-designed and taught an inquiry-based workshop on buoyancy in nature for summer students at CU Boulder.

Graduate Teaching Assistant, University of Colorado Boulder Fall 2016

Instructed labs for ASTR 1000, The Solar System.

Undergraduate Teaching Assistant, Virginia Tech Fall 2013 - Spring 2015

Instructed recitations for PHYS 1055 & 1056, Introduction to Astronomy.

MENTORING, SERVICE, AND OUTREACH

Research Mentoring:

Co-advised CU Boulder undergraduate student Anna Nica Spring 2021 - Spring 2022

Co-advised CU Boulder undergraduate student Gus Santaella Fall 2019

Service:

NRAO/GBO Users Committee April. 2022 - present

Graduate Peer Mentor, CU Boulder 2017 - 2018, 2020 - 2021

Graduate Admissions Committee, CU Boulder Dec. 2019 - Feb. 2020

Graduate Curriculum and Concerns Committee, CU Boulder Aug. 2017 - Aug. 2019

Faculty Hiring Committee, CU Boulder Jan. - Mar. 2019

Comprehensive Exam Committee, CU Boulder Aug. 2018 - May 2019

CU-STARs Administrator and mentor to undergraduates Aug. 2017 - May 2018

Outreach:

Taught unit on ancient astronomy to Gifted and Talented elementary students April 2019

Astronomy Day at Sommers-Bauch Observatory volunteer April 2019

Public Observing Host at Sommers-Bausch Observatory 2016 - 2018

Organized "sidewalk astronomy" observing events at Virginia Tech 2012 - 2015

TALKS AND PRESENTATIONS

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| Contributed talk, IAU Symposium 380 on Cosmic Masers, remote | Mar. 2023 |
| Invited seminar talk, NRAO TUNA Lunch Talks, Charlottesville | Jan. 2023 |
| Contributed dissertation talk, AAS 241, Seattle | Jan. 2023 |
| Invited seminar talk, UCLA Galactic Center Group, remote | Sept. 2022 |
| iPoster, AAS 237 virtual meeting | Jan. 2021 |
| Seminar talk, CU Boulder Black Holes Group | Feb. 2020 |
| Poster, AAS 235, Honolulu | Jan. 2020 |
| Seminar talk, CU Boulder SALT Lunch Talks | Aug. 2018 |
| Poster, AAS 232, Denver | June 2018 |
| Poster, AAS 225, Seattle | Jan. 2015 |

PUBLICATIONS

First author works in preparation: 1 publication and 1 research note

REFEREED PUBLICATIONS

First Author:

3. *3D Kinematics of Stellar SiO Masers in the Galactic Center*. **Paine, J.** & Darling, J. 2022, ApJ, 927, 181
2. *Secular Extragalactic Parallax: Measurement Methods and Predictions for Gaia*. **Paine, J.**, Darling, J., Graziani, R., & Courtois, H. 2020, ApJ, 890, 146
1. *The Gaia-WISE Extragalactic Astrometric Catalog*. **Paine, J.**, Darling, J., & Truebenbach, A. 2018, ApJS, 236, 2

Co-Author:

4. *An Updated Reference Frame for the Galactic Inner Parsec*. Darling, J., **Paine, J.**, Reid, M.J., Menten, K.M., Sakai, S., & Ghez, A. 2023, ApJ, submitted
3. *Astrometric Limits on the Stochastic Gravitational Wave Background*. Darling, J., Truebenbach, A., & **Paine, J.** 2018, ApJS, 861, 113
2. *Extragalactic Proper Motions: Gravitational Waves and Cosmology*. Darling, J. Truebenbach, A., & **Paine, J.** 2018, refereed ngVLA Science Book chapter
1. *The Geometry of the Infrared and X-Ray Obscured in a Dusty Hyperluminous Quasar*. Farrah, D. et al. [including **Paine, J.**] 2016, ApJ, 831, 76

NON-REFEREED PUBLICATIONS

2. *Kinematics in the Galactic Center with SiO Masers*. **Paine, J.** & Darling, J. 2023. in Proceedings IAU Symposium No. 380, eds. T. Hirota, H. Imai, K. Menten, & Y.. Ylva Pihlström, in press
1. *Extragalactic Proper Motions: Gravitational Waves and Cosmology*. Darling, J. Truebenbach, A., & **Paine, J.** 2019, Astro2020 Decadal Survey