Rujuta A. Purohit

rujuta.purohit.24@dartmouth.edu — (857) 250-9868
rujutapurohit.github.io

EDUCATION

Dartmouth College, Hanover, NH **June 2024**
Bachelor's of Arts with double majors in Physics and Astronomy, minor in Mathematics **GPA: 3.90/4.0**
Relevant Coursework: Quantum Mechanics, Physics of the Early Universe, Astrophysics, Electricity and Magnetism, Statistical Physics, Galaxies and Cosmology, Probability Theory (Honors), Abstract Algebra
Activities: Dartmouth Physics Society, Dartmouth Undergraduate Journal of Science, Women in Science Project, International Students' Association.

University of Cape Town, Cape Town, South Africa **Jan - Mar 2023**
Dartmouth-sponsored foreign study program at UCT and the South African Astronomical Observatory.
Completed coursework related to research methods in astronomy, observational techniques, and using the 1.0m and 1.9m telescopes at Sutherland.

Dr Ambedkar High School, Nagpur, India **June 2020**
Valedictorian, K.M. Munshi Best Student 2020 **GPA: 10/10**
Completed coursework in Physics, Calculus, Chemistry, Electronics, and English literature.

RESEARCH EXPERIENCE

Black Holes and Galaxies Research Group, Dartmouth College, Hanover, NH **Sept 2021 - Present**
Research Assistant, Presidential Scholar – Advisor: Dr Ryan C. Hickox, Co-advisor: Grayson C. Petter

- Using processing tools to analyze data from the Chandra X-Ray Observatory to identify AGNs in nearby low-mass galaxies.
- Studying the AGN candidacy of dwarf galaxies in the local Universe using X-ray & infrared luminosities, SED template fitting, and spectral analysis.
- Submitted a paper about dwarf galaxy AGNs hosting IMBHs in the Boötes field to ApJ.
- Working on a senior honors thesis about the black hole and velocity dispersion relationship in local dwarf galaxies with upcoming data from eROSITA.

CIERA Research Experience for Undergraduates, Northwestern University, Evanston, IL **June - Aug 2023**
Summer student – Advisors: Dr Giacomo Fragione and Dr Fred Rasio

- Worked on a project about analyzing the rates and properties of binary black hole mergers in dense stellar environments with a prominent runaway effect.
- Used Northwestern's high-performance computer, Quest to run simulations modeling stellar clusters and black hole mergers.
- Produced several deliverables including a draft research note, website, and poster.
- Writing a paper about binary black hole mergers and their gravitational wave detections.

Exoplanets and Heliospheres Research Group, Dartmouth College, Hanover, NH **March - Sept 2021**
Women in Science Project Intern – Advisor: Dr Hans Mueller

- Studied the dynamical evolution of planetary systems of red dwarfs through numerical simulations of the orbits of exoplanets (e.g., GJ 436b) with evaporating atmospheres.
- Created numerical simulations of stellar winds interacting with the interstellar medium in C++.

PUBLICATIONS

1. "X-ray and multi-wavelength observations of AGNs in dwarf galaxies in the Boötes field", **Purohit, Rujuta A.**; Hickox, Ryan; Petter, Grayson C., 2023, **submitted to ApJ**.
2. "Binary black hole mergers and intermediate-mass black holes in dense star clusters with stellar runaways", **Purohit, Rujuta A.**; Fragione, Giacomo; Rasio, Frederic A.; Hickox, Ryan C.; Petter, Grayson C., 2023, **in prep**.

OBSERVING EXPERIENCE

South African Astronomical Observatory, Sutherland, South Africa **Feb 2023**

- 6 nights of observing experience at the SAAO 1.0 m + SHOC, SAAO 1.0m Lesedi + Mookodi, and SAAO 1.9m telescopes.

MDM Observatory, Kitt Peak, AZ **Dec 2021**

- 5 nights of observing experience at MDM Observatory using the 2.4m Hiltner and the 1.3m McGraw-Hill telescopes.
- Developed a novel data reduction pipeline and used various analysis tools to study stellar spectra.

SELECTED TALKS

1. IMBH 2023: The Dawn of a Revolutionary Era, San Pedro, Belize "Gravitational wave signatures of runaway intermediate-mass black holes" – December 2023.
2. Galactic Frontiers: Dwarf Galaxies in the Local Volume and Beyond 2023, Flatiron Institute, New York City, NY "X-ray and multi-wavelength analysis of dwarf galaxies in the Boötes field" – July 2023.
3. New England Regional Quasars and AGN Meeting (NERQUAM) 2023, University of Rhode Island, Kingston, RI : "AGN in dwarf galaxies in the Boötes field" – May 2023.

AWARDS & HONORS

1. Dean's List: Rufus Choate Scholar (2022-2023), Third Honor Group (2020-2021, 2021-2022).
2. Frances L. Town Scientific Prize in Physics - conferred by the Department of Physics and Astronomy (2022).
3. James O. Freedman Presidential Scholar (2022-2023).
4. Kaminsky Undergraduate Research Grant (Summer 2023).

WORK EXPERIENCE

Teaching Assistant & Learning Fellow, Dartmouth College, Hanover, NH **Sept 2021 - Present**
Held the following roles:

1. Undergraduate grader for Astronomy 74/174: Astrophysics – Fall 2023
2. Learning Fellow for Physics 4: Introductory Physics II – Spring 2023
3. Teaching Assistant for Physics 13: Introductory Physics I – Fall 2021, Winter 2022, Fall 2022
4. Undergraduate grader for Astronomy 19: Habitable Planets – Spring 2022

In these roles, I graded homework, conducted in-person lab sessions, held weekly office hours, and assisted in various classroom settings.

Assistant Editor - Dartmouth Undergraduate Journal of Science, Hanover, NH **Sept 2020 - Sept 2023**

- Wrote Physics and Astronomy review articles for the 2020 Fall, the 2021 Winter, 2021 Summer, and 2022 Winter issues.
- Edited other writers' articles and managed editor schedules.

VOLUNTEER WORK & OUTREACH

Sexual Violence Prevention Project - Facilitator, Hanover, NH **July 2023 - Sept 2023**
Completed training in facilitating sexual violence workshops for freshmen.

Akshar Learning Center - Volunteer Teacher, Nagpur, India **Mar 2018 - Jul 2020**
Taught remedial lessons in Math, Science, and English to 4th - 7th graders.

SKILLS & INTERESTS

Languages: English, Hindi (native), Marathi (native), Sanskrit (professional fluency)
(Computer) Languages: Python, Mathematica, MATLAB, PyRAF, HTML/CSS/JS
Visualization software: SAOImageds9, ImageJ, XQuartz, GIMP