

# Rujuta A. Purohit

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## EDUCATION

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**Dartmouth College**, Hanover, NH

**June 2024**

*Bachelor's of Arts with double majors in Physics and Astronomy, minor in Mathematics*

**GPA: 3.9/4.0**

**Relevant Coursework:** Quantum Mechanics, Cosmology, General Relativity and Gravitation, Astrophysics, Electricity and Magnetism, Statistical Physics, 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.*

Enrolled in 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

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**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 emission spectra analysis.
- Submitted a paper about dwarf galaxy AGNs hosting IMBHs in the Boötes field to ApJ.
- Working on a senior honors thesis about the relationship between the Eddington luminosity and stellar velocity dispersion of local AGNs in dwarf galaxies.

**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 Python to run simulations on Northwestern's high-performance computer, Quest.
- Produced several deliverables including a paper in preparation, draft research note, [website](#), and poster.

**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

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1. "X-ray and multi-wavelength observations of AGNs in dwarf galaxies in the Boötes field", **Purohit, Rujuta**; Hickox, Ryan; Petter, Grayson, 2023, **submitted to ApJ**.
2. "Repeated mergers of binary black holes in dense clusters with stellar runaway effects", **Purohit, Rujuta**; Fragione, Giacomo; Rasio, Fred; Petter, Grayson; Hickox, Ryan, 2023, **in preparation** (submission expected by late-October).

## OBSERVING EXPERIENCE

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**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 new data reduction pipeline and used various analysis tools to study stellar spectra.

## SELECTED TALKS

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1. *Upcoming*: 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

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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

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**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

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**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

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