

# Simran Kaur

Charlottesville, Virginia 22904 | 434-340-8387 | gsc9zr@virginia.edu | Orcid: 0000-0002-6747-4505

Citizenship: US Citizen

## EDUCATION

**University of Virginia**, Charlottesville, Virginia

Expected May 2027

Doctor of Philosophy in Astrophysics, GPA: 3.6/4.0

- Awards: American Astronomical Society (AAS) international Travel Grant, NASA Research and Education Support Services Travel Grant, Submillimeter Array Interferometry School Travel Grant.

**University of Virginia**, Charlottesville, Virginia

May 2023

Master of Science in Astrophysics, GPA: 3.8/4.0

- Awards: American Association for the Advancement of Science (AAAS) Travel Grant, American Astronomical Society (AAS) international Travel Grant.

**The College of New Jersey**, Ewing, New Jersey

May 2021

Bachelor of Science in Astrophysics, GPA: 3.2/4.0

- Awards: The College of New Jersey Stars I/II Academic Scholarship August, Phi Theta Kappa National Academic Scholarship, Chi Alpha Epsilon Academic Scholarship, The College of New Jersey Educational Opportunity Fund, The College of New Jersey Merit Scholarship.

## RESEARCH EXPERIENCE

**Graduate Researcher** Department of Astronomy, University of Virginia/National Radio Astronomy Observatory

National Radio Astronomy Observatory, Research Advisor: Dr. Adele L. Plunkett

August 2021 - Present

- Detect proper motion of protostar CARMA-7 outflows in Serpens South Cluster, measure absolute velocity and inclination of each knot/blob of CARMA-7 outflow, investigate protostellar formation which contributes to planet formation.

**Undergraduate Researcher** Department of Physics, The College of New Jersey

The College of New Jersey, Research Advisor: Dr. Lauranne Lanz

August 2020 - May 2021

- Measured Infrared luminosities of 14 Shocked Post-Starbursts and compared with X-Ray luminosities of the same set of galaxies, measured Photometry and fit spectral energy distributions with models to determine active galactic nucleus luminosities, investigated whether relation between X-ray and infrared luminosities match known correlation.

**Undergraduate Researcher** Department of Physics, The College of New Jersey

The College of New Jersey, Research Advisor: Dr. Thulsi Wickramasinghe

August 2019- May 2020

- Measured the relationship between apparent visual magnitude (m) and redshift (z) relationship for quasars, derived luminosity distance equation of the quasars by writing code using MATLAB, data shows luminosity of the quasar is constant and they are standard candles, quasars would obey standard cosmology consistent with data and follow the same cosmological trend.

**Undergraduate Researcher** Department of Physics, The College of New Jersey

The College of New Jersey, Research Advisor: Dr. Nathan Magee

January 2019-May 2019

- Used Spectroscopic Ellipsometry to determine the initial stage of ice growth on a three-axis Peltier stage, determined significant data using Horiba and Zaber Ellipsometry Software/Hardware Interface, observed ice growth on feldspar and on Mica.

**Undergraduate Researcher** Department of Physics, The Rowan College at Burlington County

The Rowan College at Burlington County, Research Advisor: Dr. Gregory Peruguni

August 2016-May 2018

- Viewed and maneuvered the spectrum of light with a prism using slits and grating paper, analyzed light absorption and emission using spectroscopy, designed an iPhone case which is capable of testing the quality of drinking water.

## COLLABORATIONS

**ALMA Large Program Student Engagement**, 'The ALMA Feedback and Launching of Outflows survey'

February 2021-Present

**Continuum Imaging of Cygnus X region**, collaborate with Anish Rosh, Arecibo Observatory

June 2022- December 2023

## Mentorship

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**Mentored undergraduate**, Department of Astronomy, University of Virginia

February 2025 - Present

- Provide career advice to non-astro majors and help with research related questions.

**Mentored high school students**, Clover Virginia

June 2021- August 2021

- Have one on one sessions with students to advise them on majors/minors for their careers.

## **PROFESSIONAL DEVELOPMENT AND EXPERIENCE**

**Proposal Reviewer for NASA X-Ray Mission**, STScI, Baltimore

November 2024

- Reviewed proposals and took notes as part of the proposal review panel.
- Finalized proposal grades and submitted to the NASA mission directors

**Head Teaching Assistant**, Department of Astronomy, The University of Virginia

August 2023- August 2024

- Assigned Teaching Assistant (TA) duties for all TAs, coordinated orientation to illustrate TAs role in the department. Managed meetings for professors and TAs.

## **PUBLICATIONS**

- **Kaur S., & Plunkett A.** (2026). *Episodic Protostellar Outflow: Proper Motion Study in Serpens South*. Under review at The Astrophysical Journal.

## **INVITED SEMINARS AND COLLOQUIA**

- **Kaur S.** (2025). *Episodic Protostellar Outflow: Proper Motion Study in Serpens South*. Invited seminar, Department of physics, Virginia Tech.

## **CONFERENCES AND PRESENTATIONS**

- **Kaur, S., & Plunkett, A.,** (May 2025). Episodic Protostellar Outflow: Proper Motion Study in Serpens South., Workshop at ESO Headquarters, Garching near Munich, Germany, Oral Presentation.
- **Kaur, S., & Plunkett, A.,** (August 2024). Episodic Protostellar Outflow: Proper Motion Study in Serpens South. National Radio Astronomy Observatory, Charlottesville, VA, Oral Presentation.
- **Kaur, S., & Plunkett, A.,** (April 2023). Episodic Protostellar Outflow: Proper Motion Study in Serpens South. Protostars and Planets VII, Kyoto, Japan, Poster Presentation.
- **Kaur, S., & Plunkett, A.,** (February 2023). Early Stages of Star-Formation: An episodic protostellar outflow in Serpens South. American Association for the Advancement of Science, Washington, D.C, Oral Presentation.
- **Kaur, S.,** (November 2022). National Society of Black Physicists, Charlottesville VA, Recruiter.
- **Kaur, S., & Plunkett A.,** (June 2022). Early Stages of Star-Formation: An episodic protostellar outflow in Serpens South. From Stars to Galaxies II, Chalmers University, Gothenburg, Sweden, Poster Presentation.
- **Kaur, S.,** (May 2022). Vela Pulsar. Single Dish Summer School, Arecibo Observatory, Puerto Rico, Oral Presentation.
- **Kaur, S.,** (November 2021). National Society of Black Physicists, Virtual Conference.
- **Kaur, S.,** (May 2021). Investigate Blackholes in the Shocked Post Starburst Galaxies. Senior Thesis, Department of Physics, The College of New Jersey, NJ, Oral Presentation.
- **Kaur, S.,** (December 2020). Measured the relationship between apparent visual magnitude (m) and redshift (z) relationship for quasars. Colloquium, Department of Physics, The College of New Jersey, NJ, Oral Presentation.
- **Kaur, S.,** (December 2018). Light AI Mark III Device: Water Testing Device. Startup Stars Entrepreneurship Competition, Rowan University, NJ, Oral Presentation.

## **OBSERVING PROPOSALS**

- PI - 8-element Radio Interferometer, 'Observing L1448 Molecular Cloud', Submillimetre Array (2025)
- PI - 3.5m Infrared Telescope, 'Observing SVS13 Protostar', Apache Point Observatory (2023)
- PI - 12m Radio Telescope, 'Observing Vela Pulsar', Arecibo Observatory (2022)
- PI - 0.6m Robotic Telescope, 'Observing Andromeda Galaxy (Messier 31)', Fan Mountain Observatory (2021)
- PI - 27-inch Infrared Telescope, 'Searching for Open/ Globular Star clusters', M44, M45, M81, and M81 (2021)

## **RELEVANT SKILLS**

- **Programming languages:** MATLAB, Java, Python, Jupyter Notebook, Mathematica, Latex, and IDL
- **Astronomical Data Analysis :** SAOImage DS9, CIAO, AstroImageJ, CASA, CARTA
- **Multilingual:** Punjabi, English, Urdu, and Hindi

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## SERVICES

**Dark Skies Bright Kids, Coordinator** Department of Astronomy, The University of Virginia August 2021-Present

- Organize and lead semester star parties for kids in the Department of Astronomy, manage semester clubs in the Charlottesville elementary schools, teach astronomy demonstrations and games in the elementary schools.

**X-formation, Member** Department of Astronomy, The University of Virginia August 2022- Present

- Discuss early topics of astrophysics and give feedback in the group, present new research work in the Department of Astronomy and National Radio Astronomy Observatory.

**Public Night Program, Coordinator** McCormick Observatory, The University of Virginia August 2021- Present

- Help to operate a 26-inch telescope/14-inch telescope and target different celestial objects, manage presentations and observatory tours for the visitors, and schedule public nights for the department.

**Light Analytics, Board of Directors** Private Company, Mount Laurel NJ August 2021- Present

- Resolve coding discrepancies and dimensions to create an accurate model of Light AI Mark III device, arrange board meetings and provide updates of the product in the meetings.

**Graduate Panelist,** The University of Virginia August 2022

- Organized a department tour and assisted prospective students with their questions, present talk about Bob Rood Symposium and assisted them to the National radio Astronomy Observatory.

**Bob Rood Symposium, Coordinator** National Radio Astronomy Observatory May 2021

- Organized speakers' talk and keep track of their presentation, manage talks agenda and arrange lunch afterwards.

## TEACHING EXPERIENCE

**Teaching Assistant,** Department of Astronomy, The University of Virginia August 2023- Present

- Helped graduates/undergraduates on their assignments, designed homeworks and proctored exams.

**APS Conference for Undergraduate Women in Physics, Coordinator** Princeton University October 2021- March 2025

- Organize meetings and help with astrophysics workshops, manage colloquium talks and agenda for the conference.

**AstroCamp, Instructor** Clover Virginia June 2021- August 2021

- Taught and created astrophysics experiments, organized, led, and implemented camp programs, supervised campers and ensured their safety, growth, and well-being.

**Introduction to Physics, Lab Assistant** The College of New jersey August 2019- May 2021

- Helped facilitate labs and lectures with instructors, answer student questions regarding labs and physics applications, demonstrate labs and adjust equipment during labs.