Riya Riya Singh

(+1) 765-746-9440
rriya@purdue.edu

Education

2021-Current Ph.D., Department of Physics and Astronomy, Purdue University
2021-2024 Master of Science, Department of Physics and Astronomy, Purdue University, GPA: 4/4
2016-2020 Bachelor of Technology, Indian Institute of Technology Bombay, GPA: 9.36/10

Honors and Awards

1. College of Science Graduate Student Travel Award, Purdue University, 2024
2. PGSG Professional Grant, Purdue University, 2024
3. Lijuan Wang Memorial Award, Purdue University, 2023
4. Women in Science Program Spring Travel Grant, Purdue University, 2022
5. Undergraduate Research Award (URA 01), IIT Bombay, 2019
6. Future Research Talent Award, Australian National University, 2019
7. Kishore Vaigyanik Protsahan Yojna (KVPY), IISc, 2016

Publications

1. **Singh, R.** for the XENON Collaboration (2023). Search for events in XENON1T associated with Gravitational Waves. *Phys. Rev. D*, 108, 072015.
2. Kopec, A. et al. (2021). Correlated Single- and Few-Electron Backgrounds Milliseconds after Interactions in Dual-Phase Liquid Xenon Time Projection Chambers. *JINST*, 16(07), P07014.
3. **Singh, R.** & Rentala, V. (2021). Neutrinos from the cosmic noon: a probe of the cosmic star formation history. *JCAP*, 2021(08), 019.
4. **Riya** et al. (2020). Closed-Loop Simulation for Attitude Control of Nano-satellite. In: Advances in Small Satellite Technologies. *Springer*, 87-97.

Conference Presentations

1. Resolution of discrepancy in SFR at Cosmic Noon using Diffuse Supernova Neutrino Background
Poster Advances in Astroparticle Physics and Cosmology 2020, Kolkata, India
2. Closed Loop Simulation for Attitude Control of Nano-Satellite ()
Oral International Conference on Small Satellites and Systems 2019, Hyderabad, India
3. Star Formation Rate using Diffused Supernova Neutrino Background
Oral National Space Science Symposium 2019, Pune, India ()

Other Notable Presentations

1. Unveiling the Mystery: Exploring Dark Matter with Xenon Detectors
Poster 5th Annual Indiana Science Communication Day, Indianapolis Statehouse, USA
2. Calibration of the electron recoil response at the low energy using $^{14}CO_2$
Oral XENON collaboration meeting 2022, Torino, Italy
3. XENON Dark Matter Detector
Poster Annual Department of Physics & Astronomy Poster Event, Purdue University
4. Search for Events in XENON1T associated with Gravitational Wave
Poster Women in Science Program, Purdue University

Reviewing Activities

2024 Reviewed a paper for its publication in the Journal of Instrumentation (JINST).

2022 Reviewed a paper for its publication in the Astrophysical Journal (ApJ).

Research Leadership

2024 **Environment Maintainer, XENON Dark Matter Program**

- Maintains the software packages to provide collaboration with a stable platform for data analysis.

2019-2020 **System Leader, Great Lunar Expedition for Everyone (GLEE)**

- Supervised a team of **9 members** to select payloads & ideate the setup for their on-ground testing.

2017-2018 **ADCS Subsystem Head, IIT Bombay Student Satellite Project**

- Spearheaded a team to develop a quality-assured "satellite simulation framework" for the on-ground verification of control algorithms; my leadership led to the publication of a book chapter in Springer.
- Proposed different payloads and analyzed their system requirements as per the guidelines of **ISRO.**

Mentoring Experience

2023-2024 Mentored Amelia Bianu, Purdue undergraduate student, in conducting independent research (490) with our group, now pursuing PhD at Indiana University in the same field.

2022-2023 Mentored **14** undergraduate students in conducting "Research with Big Data" for Phys 323/324.

Summer 2020 Mentored **4** students in a "Summer of Science" reading project by Maths & Physics Club, IITB.

Teaching Experience

Spring 2023 Graded assignments and exams of students in ASTR 563: Astroparticle Physics at Purdue University

Spring 2022 Demonstrated **laboratory experiments** in General Physics to students, explained fundamental principles and assisted them in successfully completing the experiments.

2021 & 2018 Tutored students for General Physics at Purdue University & Engineering Mechanics at IIT Bombay

Workshops

2024 Tri-Institute Summer School on Elementary Particles covering **machine learning**, linac & detectors

2023 **Gran Sasso Hands-on** on GINGERino, an underground ringlaser gyroscope investigating earthquakes

2022 **INFN School on Underground Physics** covering phenomenology, detectors and instrumentation

2018 **GROWTH Winter School** on techniques and strategies for multiwavelength observations

Science Outreach

- Contributed to Satellite 101 wiki which now has **100k+** views and **40k+** users around the globe.
- Conducted **Ground Station Workshop** attended by **50+** students and faculties from **15+** colleges.
- As an **Eclipse Ambassador**, I gave a demonstration of concepts of Eclipse at Magic School Bus.
- Explained my research on dark matter with the Greater Lafayette community via Research-O-Rama.
- Gave an interactive lecture on space science to middle school students at a Girls' Scout group.
- Volunteered in Purdue Space Day 2021 and Regional Science Olympiad 2022 to promote science.
- Conducted a discussion on Dark Matter at IIT Bombay to provide students an essence of the topic.

Community Engagement

- As the **Director** of Big Grad events for the PGSG community team, I organized events of different cultures — Halloween, Lunar New Year & Holi. Appointed as **Vice Chair** for community team.
- As an **Associate Secretary** of the Department of Mechanical Engineering IIT Bombay, I organized various events to facilitate the interaction among **1100+** students and with 62 department faculties.
- Worked in food stalls at Football matches at Purdue University during fall of 2021 & 2022 and raised **$20000** for ASHA, an NGO to promote the education of underprivileged children.
- Taught basic mathematics to **underprivileged students** for **a year** at Abhyasika, IIT Bombay.