

Swati Ravi

swatiravi.com | [linkedin.com/in/swati-ravi](https://www.linkedin.com/in/swati-ravi)

EDUCATION

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| Massachusetts Institute of Technology , Department of Physics, Cambridge, MA | 08/23-Present |
| <i>PhD student in Astrophysics; Henry W Kendall Fellow and Barish-Weiss Fellow</i> | |
| University College Dublin , School of Physics, Dublin, IE | 09/23 |
| <i>Master of Science in Space Science and Technology with First Class Honours; George J. Mitchell Scholar</i> | |
| Columbia University , Columbia College, New York, NY | 05/22 |
| <i>Bachelor of Arts in Astrophysics, Concentration in Mathematics; Dean's List; Science Research Fellow</i> | |

HONORS

Matthew Isakowitz Fellow | [Matthew Isakowitz](#) Commercial space sector internship and mentorship, 2023
Mitchell Scholar | [US-Ireland Alliance](#) National scholarship supporting postgraduate studies in Ireland, 2022-2023
Science Research Fellow | Columbia University [Four Year Fellowship](#) for top science students, 2018-2022
20 Twenties Laureate | Aviation Week Network, [Top 20](#) aerospace and defense young professionals, 2021
First Place Student Research Paper | [AIAA SciTech](#), First place paper for tool testing at NASA NBL, 2021

PUBLICATIONS

- “[Characterizing Antibiotic Resistance in Microgravity Environments](#)” *NASA ISS Experiments Report*, 2022
- “[Sharp-edge Handheld Identifier and Remover in Low-gravity Extravehicular Environments](#)” *AIAA Aerospace Research Central*, 2021 <https://doi.org/10.2514/6.2021-0579>
- “[Space Tourism Needs Passenger Safety Regulations to Truly Take Off](#)” *Via Satellite*, 2020
- “[Data-driven modeling of MaNGA galaxies using near-field Milky Way stellar spectra](#)” *LSST*, 2019 (Poster)

PROFESSIONAL EXPERIENCE

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| Massachusetts Institute of Technology , Cambridge, MA | 08/23-Present |
| <i>Graduate Research Fellow, Polarimetry Lab</i> | |
| <ul style="list-style-type: none">• Studying structure and geometry of black holes and neutron stars using X-ray polarimetry from IXPE telescope• Operating beamline to test flight gratings for REDSoX (NASA soft X-ray polarimetry mission) | |
| Sierra Space , Broomfield, CO | 06/23-08/23 |
| <i>Destinations and Mission Safe Assurance Intern, Matthew Isakowitz Fellow</i> | |
| <ul style="list-style-type: none">• Developed payloads safety review and approval process for Pathfinder Space Station program which increased payload throughput by 46%, reduced approval time by $\frac{3}{4}$, and improved customer experience roadblocks | |
| NASA Student Payload Opportunity with Citizen Science (SPOCS) , Kennedy Space Center | 08/20-05/22 |
| <i>Principal Investigator</i> | |
| <ul style="list-style-type: none">• Won NASA's SPOCS competition with 90-page proposal, earning \$20,000 NASA funding for project. Led team of 20 in design, construction, and testing of 1.5 U payload experiment Characterizing Antibiotic Resistance in Microgravity Environments (CARMEn) flown on SpaceX CRS-24 mission to ISS. | |
| Columbia University , New York | 08/18-05/22 |
| <i>Science Research Fellow, Teaching Assistant, Resident Advisor</i> | |
| <ul style="list-style-type: none">• Astrophysics researcher and grader for Stars and Atoms course. Resident Advisor (2019-20) of 40 residents. | |
| NASA Microgravity Neutral Buoyancy Experiment Design Team , Johnson Space Center | 09/18-08/20 |
| <i>Mission Director</i> | |
| <ul style="list-style-type: none">• Lead team of 6 in design and construction of astronaut tools including lunar sample coring device for Artemis Mission and sharp-edge detection and removal tool for International Space Station tested at NASA's NBL | |
| Center for Computational Astrophysics , Columbia University & Flatiron Institute | 06/19-08/20 |
| <i>Computational Astrophysics Research Fellow</i> | |
| <ul style="list-style-type: none">• Created data-driven models of MaNGA galaxies using Milky-Way stellar spectra under Dr. Melissa Ness. Presented research poster at LSST Aug. 2019 National Conference | |

LEADERSHIP EXPERIENCE

School of Physics, University College Dublin 09/22-Present

Space Science and Technology Class Representative

- Elected by class cohort to advocate for student interests in School of Physics staff meetings.

Columbia Space Initiative, Columbia University 09/18-05/22

President

- Led 10 technical aerospace projects with over 100 total members, managing running budget of over \$75,000
- Coordinated K-12 aerospace educational workshops and public outreach events for 1,300+ attendees annually

Mission Director

- Led a team of 20 in Student Payload Opportunity with Citizen Science (SPOCS) mission, funded by NASA
- Lead team of 6 in design and construction of astronaut tools including lunar sample coring for Artemis Mission

Columbia Residential Life, Columbia University 09/18-05/20

Resident Advisor and NRHH Inductee

- Oversaw 40 undergraduate residents, fostering interpersonal growth by organizing 30+ community events, solving resident issues, and designing monthly bulletin boards educating residents on diversity and health issues
- Inducted into National Residence Halls Honorary (NRHH) King's Crown Chapter

Hall Council Treasurer and Advising Liaison

- Managed budget of \$2000 for residence hall events, facilities maintenance, and student advocacy

VOLUNTEER EXPERIENCE

Sophie Gerson Healthy Youth, New York, NY 08/18-08/22

Space Citizen Science and Outreach Organizer

- Developed and oversaw semester-long ISS citizen science project for 150 underserved middle school students
- Created & taught 5-week space science and engineering curriculum in Middle School MS302 Spring 2022
- Organized culminating "Spaceposium" poster symposium for 150 middle school citizen scientists to present posters at Columbia University's Low Library to Columbia faculty, students, and staff
- Served as astronomy camp counselor for 150 middle school students at Camp Zeke August 2022
- Planned and conducted several school visits and Columbia campus visits for 200+ middle school students involving hands-on aerospace activities and informational presentations

Reading Team Math, New York, NY 08/19-05/22

First-grade Mathematics Teacher

- Taught weekly class to 20 first-grade students in Central Harlem using self-designed curricula and 1:1 tutoring

Columbia University Medical Center, New York, NY 07/20-08/21

A Friend for Rachel Dementia Support Volunteer

- Helped people with early-moderate stage dementia continue to enjoy their interests, stay active, be involved in meaningful activity, develop new relationships, and avoid isolation through weekly zoom meetings.

Mt. Sinai Medical Center, New York, NY 06/19-03/20

Department of Psychiatry Delirium Program Volunteer

- Performed multicomponent nonpharmacological psychiatric interventions and evaluations, engaging with patients in medical and intensive care units through the Department of Psychiatry's Hospital Delirium Program

SKILLS

Computer: Python (Collin College Certificate), Mathematica, LaTeX

Languages: English (professional proficiency), Spanish (professional proficiency), Tamil (working proficiency),

INTERESTS

Dance (Bharatanatyam debut 2015), Music (Alto Saxophone, Percussion), Botany, Policy Debate, Viking History
