

Swati Ravi

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EDUCATION

PhD Physics , Massachusetts Institute of Technology <i>Supervisor: Herman Marshall</i>	2023-Present
MSc Space Science and Technology , University College Dublin <i>First-Class Honors</i>	2023
BA Astrophysics , Columbia University <i>Astrophysics major and mathematics concentration; four-year Dean's List Honors</i>	2022

SELECTED HONORS & AWARDS

Barish-Weiss Fellow <i>MIT astrophysics graduate fellowship</i>	2023
Henry W. Kendall Fellow <i>MIT physics graduate fellowship</i>	2023
Matthew Isakowitz Fellow <i>Commercial aerospace fellowship</i>	2023
Mitchell Scholar <i>National 1-year graduate fellowship for pursuing master's degree in Ireland</i>	2022
20 Twenties Laureate <i>One of 20 top young professionals in aerospace, named by Aviation Week</i>	2021
AIAA SciTech Paper Award <i>First-place student paper at SciTech international aerospace conference</i>	2021
Columbia Science Research Fellow <i>Columbia University four-year undergraduate research fellowship</i>	2018

AWARDED FACILITIES & RESOURCES

Total grant funding awarded as PI: >\$235,649

NASA Astrophysics Pioneers (\$20,000,000) Co-Investigator for selected NASA Pioneer Mission "Globe Orbiting Soft X-ray Polarimeter (GOSoX)" (Principal Investigator: Herman Marshall)	2026
IXPE DDT (150 ks) Principal Investigator of 150 ks observation program to study the outburst of black hole GS 1354-64	2026
IXPE - Cycle 3 (1.4 Ms; \$90,649) Principal Investigator of 1.4 Ms observation program "Energy-Dependent Polarization Rotation: Testing General Relativistic Disk Models with IXPE"	2026
NICER - Cycle 8 (\$45,000) Principal Investigator of archival data analysis program "Constraining Black Hole Accretion Physics in LMC X-3 with NICER Archival Observations"	2026
NuSTAR DDT (20 ks) Principal Investigator of 20 ks observation program to constrain the spectral state of GX 349+2 for simultaneous IXPE observation of the source	2025
NASA SPOCS (>\$100,000) Principal Investigator of 1.5U payload experiment awarded 30 days' time on International Space Station, fully funded launch and return from Kennedy Space Center (SpaceX CRS-24), and \$20,000 R&D grant	2020

PUBLICATIONS

ORCID: 0000-0002-2381-4184 | [ADS Library](https://arxiv.org/) | Bibliometrics: 129 citations, *h*-index: 7
23 papers (20 refereed, 2 instrument conference preceding, 1 decadal whitepaper)

First & Second Author Papers

- 3 Gnarini, Andrea, **Ravi, Swati**, et al. 2026, *Discovery of High X-Ray Polarization from the Neutron Star Low-mass X-Ray Binary Cyg X-2 on the Horizontal Branch*, ApJ 997 299. DOI 10.3847/1538-4357/ae2ad0
- 2 **Ravi, Swati**, Ng, M., Marshall, H., Gnarini, A. 2026, *What's the Buzz about GX 13+1? Constraining Coronal Geometry with QUEEN-BEE: A Bayesian Nested Sampling Framework for X-Ray Polarization Rotation Analysis*, ApJ 997 60, 2026. DOI 10.3847/1538-4357/ae21bd
- 1 Gunderson, Sean, **Ravi, Swati**, et al. 2025, *X-Ray Polarimetry of Accreting White Dwarfs: A Case Study of EX Hydrae*, ApJ 993 248. DOI 10.3847/1538-4357/ae11b5

Co-Author Papers

- 17 Mikušincová, Romana, et al. (41 co-authors including **Swati Ravi**) 2025, *The First X-Ray Polarimetry of an Eclipsing Low-Mass X-Ray Binary: Serendipitous IXPE Observation of AX J1745.6-2901*, Submitted ApJ. DOI arXiv:2512.13182
 - 16 Kashyap, Unnati, et al. (8 co-authors including **Swati Ravi**) 2025, *First X-Ray and Radio Polarimetry of the Neutron Star Low-mass X-Ray Binary GX 17+2*, ApJ 994 221. DOI 10.3847/1538-4357/ae12f3
 - 15 Marra, Lorenzo, et al. (36 co-authors including **Swati Ravi**) 2025, *Exploring MAXI J1744-294: IXPE insights into a Newly Discovered X-ray Transient*, Submitted ApJ. arXiv:2506.17050
 - 14 Kashyap, Unnati, et al. (6 co-authors including **Swati Ravi**) 2025, *X-Ray and Radio Polarimetry of the Neutron Star Low-mass X-Ray Binary GX 13+1*, ApJ 985 245. DOI 10.3847/1538-4357/adceb9
 - 13 Kashyap, Unnati, et al. (6 co-authors including **Swati Ravi**) 2025, *X-ray polarization study of the neutron star low-mass X-ray binary GX 349+2*, ApJ 986 207. DOI 10.3847/1538-4357/adda35
 - 12 Kashyap, Unnati, et al. (7 co-authors including **Swati Ravi**) 2025, *X-ray and radio polarimetry of the neutron star low-mass X-ray binary 4U 1728-34*, ApJ 985 245. DOI 10.3847/1538-4357/adceb9
 - 11 Tarana, Antonella, et al. (17 co-authors including **Swati Ravi**) 2025, *X-ray spectro-polarimetry analysis of the weakly magnetized neutron star X-ray binary GX 9+1*, A&A, 698, A245. DOI 10.1051/0004-6361/202554083
 - 10 Loktev, Vladislav, et al. (15 co-authors including **Swati Ravi**) 2025, *Exploring polarization and geometry in the X-ray pulsar 4U 1538-52*, A&A, 698, A22. DOI 10.1051/0004-6361/202554151
 - 9 Kelly, Ruth M.E., et al. (8 co-authors including **Swati Ravi**) 2025, *Exploring the Future of Soft X-ray Polarimetry: The Capabilities of the REDSoX Instrument for X-Ray Dim Isolated Neutron Star and Magnetar Studies*, ApJ 987 113. DOI 10.3847/1538-4357/adde58
 - 8 Gnarini, Andrea, et al. (14 co-authors including **Swati Ravi**) 2024, *First spectropolarimetric observation of the neutron star low-mass X-ray binary GX 3+1*, A&A, 692, A123. DOI 10.1051/0004-6361/202452642
 - 7 Bhargava, Yash, et al. (14 co-authors including **Swati Ravi**) 2024, *X-ray and Radio Campaign of the Z-source GX 340+0 II: the X-ray polarization in the normal branch*, Submitted ApJ. arXiv:2411.00350
 - 6 Forsblom, Sofia V., et al. (16 Tier 1 co-authors including **Swati Ravi**) 2024, *Probing the polarized emission from SMC X-1: the brightest X-ray pulsar observed by IXPE*, A&A, 691, A216. DOI 10.1051/0004-6361/202450937
 - 5 Gianolli, Vittoria E., et al. (24 co-authors including **Swati Ravi**) 2024, *A second view on the X-ray polarization of NGC 4151 with IXPE*, A&A, 691, A29. DOI 10.1051/0004-6361/202451645
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- 4 Bhargava, Yash, et al. (13 co-authors including **Swati Ravi**) 2024, *X-ray and Radio campaign of the Z-source GX 340+0: discovery of X-ray polarization and its implications*, Submitted ApJL. arXiv:2405.19324
- 3 Ursini, Francesco, et al. (14 co-authors including **Swati Ravi**) 2024, *X-ray spectropolarimetry of the bright atoll Serpens X-1*, A&A, 690, A200. DOI doi.org/10.1051/0004-6361/202451584
- 2 Marin, Frédéric, et al. (20 Tier 1 co-authors including **Swati Ravi**) 2024, *X-ray polarization measurement of the gold standard of radio-quiet active galactic nuclei: NGC 1068*, A&A, 689, A238. DOI 10.1051/0004-6361/202449760
- 1 Bobrikova, Anna, et al. (24 Tier 1 co-authors including **Swati Ravi**) 2024, *Discovery of a strong rotation of the X-ray polarization angle in the galactic burster GX 13+1*, A&A, 688, A170. DOI 10.1051/0004-6361/202449318

Non-Refereed Papers († indicates alphabetical authoring)

- 3 Heine, Sarah, et al. (12 co-authors including **Swati Ravi**) 2025, *Mission design and development of the rocket experiment demonstration of a soft x-ray (REDSOX) polarimeter*, Proceedings of the SPIE 1362510. DOI 10.1117/12.3064718
- 2 †Dada, Natasha, et al. (including **Swati Ravi**) 2021, *Sharp-edge Handheld Identifier and Remover in Low-gravity Extravehicular Environments*, AIAA SciTech Forum Proceedings, 2021-0579. DOI 10.2514/6.2021-0579
- 1 †Broddrick, Jared, et al. (including **Swati Ravi**) 2021, *Microbial reference missions and open science to accelerate Space Biology investigations*, Decadal Survey on Biological & Physical Sciences Research in Space.

TALKS & PRESENTATIONS

Invited Talks & Seminars

Frontier Research in Astrophysics <i>Palermo, Italy</i>	2026
Harvard Institute for Theory and Computation (ITC) Luncheon <i>Cambridge, Massachusetts</i>	2025
National Institute for Astrophysics (INAF-IAPS) Seminar <i>Rome, Italy</i>	2025
Committee on Space Research (COSPAR) Scientific Assembly <i>Busan, South Korea</i>	2024
Columbia Astrophysics Pizza Lunch <i>New York, New York</i>	2022

Contributed Talks

High Energy Astrophysics Division (HEAD) 22 Meeting <i>St. Louis, Missouri</i>	2025
Extragalactic jets at all scales <i>Heraklion, Greece</i>	2025
European Astronomical Society (EAS) Annual Meeting <i>Cork, Ireland</i>	2025
American Astronomical Society (AAS) 246 Summer Meeting <i>Anchorage, Alaska</i>	2025
American Astronomical Society (AAS) 245 Winter Meeting <i>National Harbor, Maryland</i>	2025
NASA Physics of the Cosmos Early Career Workshop <i>Virtual</i>	2024
Committee on Space Research (COSPAR) Scientific Assembly <i>Busan, South Korea</i>	2024

Contributed Posters

Frontiers in X-Ray Polarimetry (FiXP) <i>L'Aquila, Italy</i>	2025
International X-ray Polarimetry Symposium (IXPO) <i>Huntsville, Alabama</i>	2024
Next-Generation Suborbital Researchers Conference (NSRC) <i>Broomfield, Colorado</i>	2020
Large Synoptic Survey Telescope (LSST) Community Workshop <i>Tucson, Arizona</i>	2019

TEACHING

Teaching Assistant UN1836 Stars and Atoms, Columbia University	Spring 2022
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ACADEMIC & DEPARTMENTAL SERVICE

Referee The Astrophysical Journal (ApJ)	2025-Present
Co-Organizer & Co-Host MIT Kavli Institute Monday Afternoon Talks	2025-Present
Selection Committee Interviewer/Evaluator MIT Kavli Institute Artist in Residence Program	2025-2026
Co-Chair, Graduates Advising Graduate Admissions MIT Physics Department	2025-2026
President of Admission MIT Physics Graduate Student Council	2024-Present
Environmental Health and Safety Representative MIT AeroAstro Rocket Team Laboratory	2024-Present
Class Representative University College Dublin Physics Department	2022-2023

COMMUNITY SERVICE & PUBLIC OUTREACH

Planetarium Presenter MIT Kavli Institute	2025-Present
Project Lead, Astrophysics Community Quilt MIT Kavli Institute	2024-Present
Peer Mentor Matthew Isakowitz Fellowship Program	2024
Admissions Mentor MIT Physics Graduate Application Assistance Program	2023-Present
Spaceposium Citizen Science Symposium Organizer Columbia University	2020-2022
Guest Science Curriculum Developer and Instructor NYC Middle School 302	2020-2022
Astronomy Camp Counselor Camp Zeke + Sophie Gerson Healthy Youth Summer Camp	2022
Math Teacher (Grades 1-4) Harlem Reading Team Math Program	2019-2022

SCIENCE COMMUNICATION & SELECTED PRESS

Science Communication

Invited Art Gallery Research Talk <i>MIT List Visual Arts Center</i> <i>Watch here</i>	2026
Houston We Have a Podcast Episode <i>NASA Johnson Space Center</i> <i>Listen here</i>	2021
Op-Ed on Commercial Aerospace Safety <i>Via Satellite Magazine</i> <i>Read here</i>	2020

Press

X-Ray Polarimetry of Accreting White Dwarfs (<i>Gunderson, Sean, Ravi, Swati. et al., ApJ 993-248</i>) <i>Covered by MIT, NASA, Space.com+</i>
CARMEn International Space Station payload experiment <i>Covered by Columbia University, NASA+</i> <i>Launch broadcast by SpaceX</i>
