

Anirudh Salgundi

Junior Research Fellow at IIT Bombay

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EDUCATION

Master of Science (Physics), CHRIST University, India

Thesis: “Spectral properties of GX 5-1”

June 2020 – May 2022

GPA 8.5/10

Bachelor of Science, Bangalore University, India

Physics, Chemistry and Mathematics

June 2017 – Sep 2020

GPA 7.89/10

PUBLICATIONS

Below is a list of Refereed Publications which have been published/under preparation

1. **Salgundi, A.**, et al. (2024), “Bursts, Beats, and Beyond: Uncovering the landscape from accretion to ignition of 4U 1728–34 using *AstroSat*” (submitted to *JAA*, under review)
2. Srinivasaragavan, G., , **Salgundi, A.**, et al. (2025), “Multi-Wavelength Analysis of AT 2023sva: a Luminous Orphan Afterglow With Evidence for a Structured Jet”. (Accepted, *MNRAS*)
3. Ahumada, T., Anand, S., , **Salgundi, A.**, et al. (2024), “Searching for gravitational wave optical counterparts with the Zwicky Transient Facility: summary of O4a”, *PASP*, 136, 114201.
4. Mondal, S., **Salgundi, A.**, et al. (2023), “Evolution of low-frequency quasi-periodic oscillations in GX 339-4 during its 2021 outburst using *AstroSat* data”, *MNRAS*, 526, 4718.
5. **Salgundi, A.**, et al. (*in prep*) (2025), “Comprehensive study of Thermonuclear bursts in *AstroSat* data”

Below are some of my important non-refereed publications. [Here](#) is a full list (43 GCNs, 3 TNS, and 2 ATels).

1. **Salgundi, A.**, Swain, V., Kumar, H., et al. (2023), GRB Coordinates Network, “GRB 230812B: Zwicky Transient Facility Identifies Optical Afterglow Candidate of Fermi GRB (Trigger 713559497)”, [34397, 1](#).
2. **Salgundi, A.**, Swain, V., Kumar, R., et al. (2023), GRB Coordinates Network, “AT2023sva/GRB230916B: GIT observations of the afterglow”, [34780, 1](#).
3. Pathak, U., **Salgundi, A.**, Waratkar, G., et al. (2023), GRB Coordinates Network, “GRB 230812B: Chandra late-time detection of the X-ray afterglow”, [34632, 1](#).
4. Swain, V., Andreoni, I., ... , **Salgundi, A.**, (2023), Transient Name Server AstroNote, “AT2023lcr: Zwicky Transient Facility discovery of a fast fading red transient”, [Transient Name Server 178, 1](#).
5. Thomas, N. T., **Anirudh, S.**, Giridharan, L., Gudennavar, S. B., et al. (2022), The Astronomer’s Telegram, “*AstroSat* observes XTE J1701-462 in its Z phase”, [15654, 1](#).

RESEARCH EXPERIENCE

1. Junior Research Fellow (Indian Institute of Technology Bombay)

Jan 2023 – Present

Supervisor: [Prof. Varun Bhalerao](#)

“Fast Transients with GROWTH-India Telescope”

- Led the Discovery of optical counterpart of GRB230812B using Zwicky Transient Facility.
- Led observations with GROWTH-India Telescope for the orphan afterglow candidate AT2023sva.
- Part of the Discovery team for “ZTF23aaoohpy/AT2023lcr”, fast fading transient.
- Part of the GROWTH-India Telescope team in searching Electromagnetic Counterparts to Gravitational Wave Events, in collaboration with the Zwicky Transient Facility team led by Caltech.
- Daily scanning for fast transients in ZTF data through ZTFRest.

“Thermonuclear bursts in Neutron Star Low Mass X-ray Binaries”

- Studying a sample of 15 thermonuclear X-ray Bursts from two transient Low Mass X-ray Binary sources 4U 1728–34 & 4U 1735–44 using *AstroSat* data.
- Developed pipelines for basic data reduction, time-resolved burst spectral analysis, and timing analysis for exploring accretion phenomena and rapid variability in lightcurves.

- Studied millisecond variability (Quasi Periodic Oscillations) in persistent emission from the accretion disk, and estimated spin period and magnetospheric radius.
- Performed Measurements for Photospheric radius, distance of the source and the spin frequency of the Neutron Star in the system, through thermonuclear bursts.

2. Visiting Student Researcher (Indian Institute of Astrophysics)

Nov 2022 – Dec 2022

Supervisor: **Dr. Santanu Mondal**

- Conducted energy-dependent time-averaged temporal analysis of a transient black hole X-ray binary GX 339–4 by utilising archival data from *NICER* and *AstroSat* missions
- Studied energy dependence and time evolution of Quasi Periodic Oscillations (QPOs) and their harmonic components in the power density spectrum.
- Developed pipelines energy dependent and time resolved temporal studies of persistent sources.
- Co-authored a Publication.

APPROVED TARGET OF OPPORTUNITY PROPOSALS

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| Chandra DDT (Co-PI) 50 ks observations with ACIS instrument <i>“Observing GRB230812B - To understand Jet Physics for an Extremely Bright GRB”</i> | Sep 2023 |
| AstroSat ToO (Co-PI) 40 ks observations with LAXPC and SXT instrument <i>“AstroSat/SXT confirms GX 339-4 to be in the low-hard state”</i> | Aug 2022 |
| AstroSat ToO (Co-PI) 40 ks observations with LAXPC and SXT instrument <i>“AstroSat observes XTE J1701-462 in its Z phase”</i> | Sep 2022 |

SKILLS

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| Astronomy Softwares | XSPEC, XSELECT, FT00LS, ds9, IRAF |
| Programming Languages | Python, Bash |
| Python Packages | Astropy, Stingray, Numpy, Scipy, Pandas, Matplotlib, Seaborn |
| Languages | English, Kannada, Telugu, Hindi |

CONFERENCES AND WORKSHOPS

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| 1. Workshop on AstroStatistics (<i>Workshop - Attendee</i>) | December 2024 |
| 2. Transients 2024 (<i>Conference - Poster Presentation</i>) <i>Broadband spectral and timing analysis of Slow Burster 4U 1728–34 using AstroSat</i> | April 2024 |
| 3. The 42nd meeting of the Astronomical Society of India (<i>Conference - Poster Presentation</i>) a. <i>Broadband spectral and timing analysis of Slow Burster 4U 1728–34 using AstroSat</i> b. <i>GRB 230812B - Exploring Jet physics and Polarization for an extremely bright Gamma Ray Burst</i> | Feb 2024 |
| 4. Zwicky Transient Facility Summer School (<i>Summer school - Remote attendee</i>) | July 2023 |
| 5. The 41st meeting of the Astronomical Society of India (<i>Conference - Poster Presentation</i>) <i>Spectro-Temporal behaviour of Black Hole X-ray Binary GX 339-4 using AstroSat data</i> | March 2023 |
| 6. Conference on 7 years of <i>AstroSat</i> (<i>Conference - Attendee</i>) | Sep 2022 |
| 7. Time Domain and Multi-Messenger Astronomy workshop (<i>Workshop - Remote Attendee</i>) | Aug 2022 |

PROJECT MENTORING

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| Nishanth Karthik Nayak First Year undergraduate (Physics) at Pennsylvania University “Determining Distances and Ages of Open Clusters” | Nov 2022 |
| Shibam Sundar Mahakud First Year undergraduate (Mechanical Engineering) at Indian Institute of Technology Bombay “Determining Distances and Ages of Open Clusters” | Nov 2022 |
| Manan V Jain Final Year undergraduate (Aerospace Engineering) at Amrita Vishwa Vidyapeetham “Building Citizen Science program back end infrastructure for SSERD (a Non Profit Organization)” | Sep 2022 |

AWARDS AND FELLOWSHIPS

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| Indian Institute of Astrophysics Visiting student fellowship | Nov 2022 |
| Best Student Science Communicator Award (<i>Awarded by Govt. of Karnataka, India</i>) | Sep 2018 |

OUTREACH AND POSITIONS OF RESPONSIBILITIES

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| Student POC, TechConnect, IIT Bombay | Dec 2024 |
| LOC member, Transients 2024 conference | April 2018 |
| Booth Co-ordinator, TechConnect, IIT Bombay | Dec 2023 |
| Program Head - Asteroid search campaign at SSERD | March 2020 – Present |
| Astronomy Education Content Developer for ISRO’s YUVIKA program | June 2022 |
| Associate editor - Shasthra Snehi | 2020-2023 |

EXTRACURRICULAR AWARDS AND ACHIEVEMENTS

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| Cultural Patronage - State level inter college theatre arts competition | Feb 2020 |
| Sri Thirunarayana Memorial Prize - For best freshman student in cultural activities. | Sep 2017 |

REFERENCES

Prof. Varun Bhalerao
Associate Professor
Indian Institute of Technology Bombay, Mumbai, India
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Prof. Blesson Mathew
Associate Professor
Christ University, Bangalore, India
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Dr. Santanu Mondal
Ramanujan Fellow
Indian Institute for Astrophysics, Bangalore, India
santanu.mondal@iiap.res.in