# Anirudh Salgundi

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## Education

**1. Master of Science (Physics)** June 2020 – May 2022
Final Grade: 8.5/10 *CHRIST University*

- *Thesis: "Spectral properties of GX 5-1"*
- *Utilized archival observations of Low Mass X-ray Binary GX 5-1 from AstroSat.*
- *Performed Flux Resolved Spectroscopy to understand source spectral evolution along its Hardness Intensity Diagram.*

**2. Bachelor of Science (Physics, Chemistry and Mathematics)** June 2017 – Sep 2020
Final Grade: 7.89/10 *Bangalore University*

- *Attended Research Education Advancement program conducted by Bangalore Association for Science Education.*
- *Recipient of Best Science communicator award by Department of Science and Technology, Government of Karnataka, India.*

## Research Experience

**1. Project Research Assistant** *Jan 2023 - Present*
Supervisor - Prof. Varun Bhalerao (hrefhttps://www.star-iitb.in/STAR Lab) *IIT Bombay, India*

***"Thermonuclear Bursts in 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.

***"Fast Transients with GROWTH-India"***

- Observations and Follow-up campaigns for Gravitational Wave (GW) events from LIGO, Virgo, KAGRA (LVK) collaborations and fast transients using the 0.7m GROWTH-India telescope in collaboration with the Zwicky Transient Facility (ZTF) led by Caltech.
- Following up transient X-ray binaries undergoing outbursts.
- Daily scanning for fast transients in ZTF data through `ZTFRest`.

**2. Vistitng Student Researcher** *Dec 2022- Jan 2023*
Supervisor - Dr. Santanu Mondal *IIA Bengaluru, India*

***"Temporal study of GX 339-4, a Black Hole Transient"***

- 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 surces.
- *Recipient of **IIA Visiting Students Fellowship** (2022)*, Indian Institute of Astrophysics, Bangalore.

## Publications

Below is the list of my published/to be submitted refereed publications

1. **Salgundi, A**., et al. (*in prep*) (2024), "Spectro-Temporal studies of Thermonuclear bursts and kHz QPOs in Slow Burster 4U 1728-34" *(submitting to ApJ)*
2. 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. (Citations: 2) DOI (Citations: 4)

3. Ahumada, T., Anand, S., Coughlin, M. W., ..... **Salgundi, A**., et al. (2024),"Searching for gravitational wave optical counterparts with the Zwicky Transient Facility: summary of O4a", arXiv:2405.12403, *(Submitted to ApJ)*. (Citations: 3)
4. Rekhi. P ., **Salgundi, A**., et al. (*in prep*) (2024), "Timing and spectral studies of 4U 1735-44 using AstroSat" *(submitting to ApJ)*

Some of my important non-refereed publications are listed below. **Here** is a full list of my non-refereed publications (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. Swain, V., Andreoni, I., Coughlin, M., Kumar, H., **Salgundi, A**., (2023), Transient Name Server AstroNote, "ZTF23aaoohpyAT2023lcr: Zwicky Transient Facility discovery of a fast fading red transient", Transient Name Server 178, 1.
4. 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.

## Approved Target of Opportunity proposals

**1. Chandra DDT (Co - PI)** *Sep 2023*
50 *ks observations with ACIS instrument*
"Observing GRB230812B - To understand Jet Physics for an Extremely Bright GRB"
GCN Circular 34632

**2. AstroSat ToO (Co - PI)** *Aug 2022*
40 *ks observations with LAXPC and SXT instruments*
"Spectro-temporal studies of GX 339−4 during its outburst, using AstroSat"
Astronomer's Telegram #15615

**3. AstroSat ToO (Co - PI)** *Sep 2022*
40 *ks observations with LAXPC and SXT instruments*
"Spectro-temporal studies of XTE J1701−462 during its outburst, using AstroSat"
Astronomer's Telegram #15654

## Conferences, Workshops and Summer schools

**1. The 42nd meeting of the Astronomical Society of India** *Feb 2024*
Conference - Poster Presentation *IISc, India*
*a. Broadband spectral and timing analysis of Slow Burster 4U 1728−34 using AstroSat*
*b. GRB 230812B - Exploring Jet physics and Polarization for an extremely bright Gamma Ray Burst*

**2. Transients 2024–IIT Bombay** *April 2024*
Conference - LOC & Poster Presentation *IIT Bombay, India*
*Broadband spectral and timing analysis of Slow Burster 4U 1728−34 using AstroSat*

**3. Zwicky Transient Facility time-domain astronomy Summer School** *July 2023*
Summerschool - Remote Attendee *University of Minnesota, USA*

**4. The 41st meeting of the Astronomical Society of India** *March 2023*
Conference - Poster Presentation *IIT Indore, India*
*Spectro-Temporal behaviour of Black Hole X-ray Binary GX 339-4 using AstroSat data*

**5. Conference on 7 years of AstroSat** *Sep 2022*
Conference - Attendee *ISRO Headquarters, Bangalore, India*

**6. Time Domain and Multi-Messenger Astronomy workshop** *Aug 2022*
Workshop - Remote Attendee *NASA-GSFC, Maryland, USA.*

## Project mentoring

**1. Nishant Kartik Nayak** *Nov 2022*
First year undergraduate student in Physics at Pensylvenia University
*"Determining Distances and Ages of Open Clusters"*

**2. Shibam Sundar Mahakud** *Nov 2022*
First year Undergraduate at IIT Bombay in Mechanical Engineering
*"Determining Distances and Ages of Open Clusters"*

**3. Manan V Jain** *Sep 2022*
Fourth year undergraduate at Amrita Vishwa Vidyapeetham in Aerospace Engineering
*"Building Citizen Science program back end infrastructure for SSERD (a Non Profit Organization)"*

## Outreach and Positions of Responsibility

**1. Program Head - Asteroid search campaign** *March 2020 - Present*
*Society for Space Education and Research Development*
*My responsibilities encompass coordinating the citizen science program, searching for Near Earth Objects (NEOs). I have a track record of training over 850 participants, resulting in 358 preliminary discoveries.*

**2. Astronomy Education Content Developer for ISRO's YUVIKA program** *June 2022*
Genex Space
*My primary contribution has been to design and develop a chapter titled "Universe within us" designed to provide high school students with a comprehensive understanding of the subject.*

**3. Associate editor - Shasthra Snehi** *2020 - Present*
Shasthra Snehi
*My main role involves crafting science blog articles and conducting proofreading tasks on articles submitted by diverse pool of authors.*

## Extracurricular Awards & Achievements

**1. Cultural Patronage - Inter College theater Competition** *Feb 2020*
Awarded by: Bharata Yatra Kendra, Mysore, India. *Rangasourabha*
Secured first prize state level professional theater arts competition, where I led Music production for the play "*Agnivarna*".

**2. Best Student science communicator award** *Sep 2018*
Awarded by: Government of Karnataka, India. Department of Science and Technology
For Securing the first position in the state level science communication competition.

**3. Sri Thirunarayana Memorial Prize** *2017*
Awarded by: National Degree College, Bangalore National Education Society
For best freshman student in Cultural activities.