

# Anirudh Salgundi

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🌐 [anirudhsalgundi.github.io](https://anirudhsalgundi.github.io)  
in Anirudh Salgundi

## Education

### 1. Master of Science (Physics)

Final Grade: 8.5/10

June 2020 – May 2022

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)

Final Grade: 7.89/10

June 2017 – Sep 2020

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

Supervisor - Prof. Varun Bhalerao ([hrefhttps://www.star-iitb.in/STAR Lab](https://www.star-iitb.in/STAR%20Lab))

Jan 2023 - Present

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. Visiting Student Researcher

Supervisor - Dr. Santanu Mondal

Dec 2022- Jan 2023

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 surges.
- 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, “ZTF23aaohpyAT2023lcr: 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

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### 1. Nishant Kartik Nayak

Nov 2022

First year undergraduate student in Physics at Pennsylvania 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

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### 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

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### 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.