Salgundi

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Anirudh Salgundi

Education

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.*

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

Research Assistant January 2023 – Present
Supervisor - Prof. Varun Bhalerao STAR Lab Indian Institute of Technology, Bombay

- Conducted time-resolved spectroscopy on 13 thermonuclear burst samples to elucidate the photospheric radius expansion mechanism. Additionally, investigated rapid X-ray variability, in the context of 4U 1728-34 (slow burster), a transient ultra-compact Neutron Star Low Mass X-ray Binary (NS-LMXB).
- Observations and Follow-up campaigns for Gravitational Wave (GW) events from LIGO/Virgo/KAGRA (LVK) collaborations and fast transients using with 0.7m GROWTH-India telescope and collaboration with Zwicky Transient Facility (ZTF) led by Caltech. This concerted effort has yielded in detecting afterglows of Gamma Ray Bursts (GRBs), orphan afterglows and plausible counterpart candidates for a GW events.

Visiting Student Researcher December 2022 – January 2023
Supervisor - Dr. Santanu Mondal Indian Institute of Astrophysics

- Conducted energy-dependent time-averaged temporal analysis of a transient black hole X-ray binary, unveiling the prominence of a quasi-periodic oscillation (QPO) soft X-ray band, accompanied by its sub-harmonic and harmonic components. Additionally, the time-resolved study of QPOs revealed the presence of a harmonic component that exhibited frequency evolution, consistent with a propagating oscillatory shock scenario. Furthermore, characterized the source's flux profile, illustrating an alternating pattern over a timescale of $\lesssim$100 ks with notable Hard X-ray variability.

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. Rekhi. P ., **Salgundi, A**., et al. (in prep) (2024), "Timing and spectral studies of 4U 1735-44 using AstroSat" (submitting to ApJ)

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).
4. Mondal, S., **Salgundi, A**., Chatterjee, D., 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????

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. (Citations: 2)
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.

Approved Target of Opportunity proposals

Chandra DDT (Co - PI) September 2023
50 *ks observations with ACIS instrument*
"Observing GRB230812B - To understand Jet Physics for an Extremely Bright GRB"

AstroSat ToO (Co - PI) August 2022
40 *ks observations with LAXPC and SXT instruments*
"Spectro-temporal studies of GX 339−4 during its outburst, using AstroSat"

AstroSat ToO (Co - PI) September 2022
40 *ks observations with LAXPC and SXT instruments*
"Spectro-temporal studies of XTE J1701−462 during its outburst, using AstroSat"

Conferences, Workshops and Summer schools

The 42nd meeting of the Astronomical Society of India February 2024
Conference - Poster Presentation IISc, India

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

The 41st meeting of the Astronomical Society of India 2023
Conference - Poster Presentation IIT Indore, India

Conference on 7 years of AstroSat 2022
Conference - Attendee ISRO Headquarters, Bangalore, India

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

Outreach and Positions of Responsibility

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 700 participants, resulting in 313 preliminary discoveries.

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.

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.