

# Yash Bhargava

## Curriculum Vitae

### Personal Data

DOB 01 Oct 1992  
Nationality Indian  
Postal Address INAF - Osservatorio Astronomico di Cagliari, via della Scienza, 5, 09047 Selargius, Cagliari, Italy  
Institute Email yash.bhargava [at] inaf.it  
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### Education

Aug 2016 - **Ph.D.**, *Inter University Centre for Astronomy and Astrophysics (IUCAA)*, India,  
Jan 2022 Thesis title: Spectro-timing study of Accretion Disks in Black Hole binaries  
Supervisors: Prof. Dipankar Bhattacharya and Prof. Ranjeev Misra  
Degree awarded in February, 2022  
Aug 2010 - **B.Tech & M.Tech in Energy engineering**, *Indian Institute of Technology Bombay*, Mumbai,  
Jul 2015 India, GPA 8.82/10

### Academic Employment

Apr 2025 - **Postdoctoral Fellow**, *INAF-OA Cagliari*, Cagliari, Italy, PI: Dr. Matteo Bachetti  
present  
Aug 2022 - **Postdoctoral Fellow**, *Tata Institute of Fundamental Research*, Mumbai, India,  
Nov 2024 PI: Prof. Sudip Bhattacharyya  
Sep 2015 - **Junior Research Fellow**, *Tata Institute of Fundamental Research*, Mumbai, India, Supervisor:  
Jul 2016 Prof. A. R. Rao

### Short-term Academic Visits

Jan 2025- **Inter University Centre for Astronomy and Astrophysics (IUCAA)**, Pune, India,  
Mar 2025 PI: Prof. G. Dewangan and Prof. R. Misra  
Nov-Dec 2024 **Tata Institute of Fundamental Research**, Mumbai, India, PI: Prof. Sudip Bhattacharyya  
Jun-Jul 2019 **INAF-OAB Merate**, Merate, Italy, PI: Prof. Tomaso Belloni

### Research Interests

High Energy Accretion in compact objects, Black hole binaries, Neutron star binaries, X-ray Novae  
Astrophysics

### Computing Skills and Experience

Programming languages/tools: Python, Jupyter, Bash, Git  
High energy astrophysics software: HEASoft, XSPEC, GHATS, Stingray

### Fellowships and Awards

2023 K.D. Abhyankar Best thesis presentation award- Honorable mention @ ASI 2023  
2022 National Postdoctoral fellowship  
2016 Council of Scientific and Industrial Research-University Grants Commission (India) Research Fellowship

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## Recent Journal articles: published

- 2025 **Rapid mid-infrared spectral timing with JWST: GRS 1915+105 during an MIR-bright and X-ray-obscured state**, P. Gandhi and others including **Yash Bhargava**, MNRAS, <https://doi.org/10.1093/mnras/staf036>
- 2024 **Probing outbursts of the transient neutron star low mass X-ray binary Aql X-1 with NICER: a study of spectral evolution.**, K. G. Putha, **Yash Bhargava**, and S. Bhattacharyya, MNRAS, <https://doi.org/10.1093/mnras/stae1711>
- 2024 **An IXPE-led X-Ray Spectropolarimetric Campaign on the Soft State of Cygnus X-1: X-Ray Polarimetric Evidence for Strong Gravitational Lensing**, J. Steiner, and others including **Yash Bhargava**, ApJL Volume 969, Issue 2, L30, <https://doi.org/10.3847/2041-8213/ad58e4>
- 2024 **Soft X-ray and FUV observations of Nova Her 2021 with AstroSat**, **Yash Bhargava**, K. P. Singh, G. C. Dewangan and others, MNRAS Volume 528 Issue 1 pp28, <https://doi.org/10.1093/mnras/stad3870>
- 2024 **High hard X-ray polarization in Cygnus X-1 confined to the intermediate hard state: evidence for a variable jet component**, T. Chattopadhyay, A. Kumar, A.R. Rao, **Yash Bhargava**, and others, ApJL Volume 960, Issue 1, L2, <https://doi.org/10.3847/2041-8213/ad118d>
- 2024 **AstroSat and NICER timing view of the Z-type Neutron Star X-ray binary GX 340+0**, M. Pahari S. Suman, **Yash Bhargava**, and others, MNRAS Volume 528, Issue 3 pp 4125, <https://doi.org/10.1093/mnras/stae309>
- 2023 **Probing the soft state evolution of 4U 1543-47 during its 2021 outburst using AstroSat**, N Husain, **Yash Bhargava**, A. Garg et al., MNRAS, Volume 524, Issue 4, pp.5817, <https://doi.org/10.1093/mnras/stad2204>
- 2023 **AstroSat View of the Neutron Star Low-mass X-Ray Binary GX 340+0**, **Yash Bhargava**, S.Bhattacharyya, J. Homan, and M. Pahari, ApJ, Volume 955, Issue 2, pp.102 <https://doi.org/10.3847/1538-4357/acee7a>
- 2022 **Probing the shot behaviour in Cygnus X-1 using simultaneous AstroSat-NICER observation**, **Yash Bhargava**, N. Hazra, A. R. Rao, R. Misra, et al, MNRAS, Volume 512, Issue 4, pp.6067-6077 <https://doi.org/10.1093/mnras/stac853>
- 2021 **A timing-based estimate of the spin of the black hole in MAXI J1820+070**, **Yash Bhargava**, T. Belloni, D. Bhattacharya, S. Motta and G. Ponti, MNRAS, Volume 508, Issue 2, p.3104-3110, <https://doi.org/10.1093/mnras/stab2848>
- 2019 **Spectro-timing analysis of MAXI J1535-571 using AstroSat**, **Yash Bhargava**, T. Belloni, D. Bhattacharya and R. Misra, MNRAS, Volume 488, Issue 1, p.720-727, <https://doi.org/10.1093/mnras/stz1774>

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## Journal articles: under review/accepted

- ApJ **X-ray and Radio campaign of the Z-source GX 340+0: discovery of X-ray polarization and its implications**, **Yash Bhargava**, M Ng, and others, arXiv:2405.19324
- ApJ **X-ray and Radio campaign of the Z-source GX 340+0 II: the X-ray polarization in the normal branch**, **Yash Bhargava**, T D Russell, and others, arXiv:2411.00350  
accepted for publication

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## Peer review

- Oct 2021-current Acted as a reviewer for Monthly Notices of Royal Astronomical Society (MNRAS) journal
- Oct 2024 Acted as a reviewer for the proposals for *IXPE* guest observer program

- Apr 2025- current    Acted as a reviewer for Astronomy and Astrophysics (A&A) journal
- Apr 2025- current    Acted as a reviewer for Astrophysical journal (ApJ)
- Jun 2025    Acted as a reviewer for GMRT observation proposals

## Recently accepted Observation Proposals as PI

- Accepted in Dec 2024    "Identifying the geometry of weakly magnetized low mass X-ray binary Aql X-1 using joint IXPE, NICER AND NUSTAR", *Primary Observatory*: IXPE
- Accepted in Dec 2023    Polarimetric observation of GX 340+0 along the Z-track. *Observatory*: IXPE
- May 2023    Investigating the spectro-polarimetric properties of Cyg X-1 using AstroSat-IXPE coordinated observation. *Observatory*: AstroSat
- Jul 2022    Probing rapid variability in the jet of BHB GX 339-4 using multi-wavelength observations. *Observatory*: AstroSat

## Select Conferences and Seminars

- Jul 2024    COSPAR 2024  
**Talk**: Fast and Furious: Nova Her 2021 caught by *AstroSat* from UV to X-rays  
**Talk**: Evolution along the Z track: spectro-timing observations of GX 340+0 with *AstroSat*
- Jun 2023    X-ray Universe 2023  
**Poster**: Explaining the Z-track of GX 340+0 using wideband observations with *AstroSat*
- Jul 2022    COSPAR 2022  
**Talk**: Peculiar periodicity in V1674 Her 2021 using multi-wavelength observations  
**Talk**: Investigating low reflection in black hole binaries using NuSTAR

## Select Schools and Workshops

- Feb 2025    3rd XRISM Community workshop, *attended virtually*
- July 2024    Joint NICER/IXPE Workshop 2024, *attended virtually*  
**Talk**: X-ray Polarization in Neutron star Low mass X-ray Binary GX 340+0
- Mar 2022    Workshop on Accretion physics, ASI 2022
- Aug 2021    ZTF summer school on Variable stars, (*attended virtually*)

## Teaching Activities

- Nov 2019    AstroSat Data Analysis in Goa University
- Aug-Sep 2019    Teaching Assistant for the IUCAA Graduate School course Mathematical Methods in Physics (Course Instructor: Prof. Dipankar Bhattacharya)
- May 2018    Hands on X-ray data analysis for Summer School participants at IUCAA

## Key roles

- Science Outreach    I have actively participated in the Science Outreach activities organized by IUCAA on the National Science Day (28th February of every year). I have given popular level talks in my native language (Hindi), have organized quiz competitions for school students and organized star gazing sessions for general public.

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## References

### **Dr. Matteo Bachetti**

Senior Researcher

INAF Osservatorio Astronomico di Cagliari

Via della Scienza 5, 09047

Selargius (CA), Italy

✉ [matteo.bachetti@inaf.it](mailto:matteo.bachetti@inaf.it)

### **Prof. Sudip Bhattacharyya**

Professor

Tata Institute of Fundamental Research, Colaba

Mumbai 400005, India

✉ [sudip@tifr.res.in](mailto:sudip@tifr.res.in)

### **Prof. Dipankar Bhattacharya**

Professor

Ashoka University

Plot No. 2, Rajiv Gandhi Education City,

Sonepat, Haryana-131029

✉ [dipankar.bhattacharya@ashoka.edu.in](mailto:dipankar.bhattacharya@ashoka.edu.in)

### **Prof. Ranjeev Misra**

Professor

Inter-University Centre for Astronomy and Astrophysics

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Pune 411007, India

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