

## Research Interests

- Galaxy Evolution • Active galactic nuclei • AGN multi-wavelength variability • Supermassive Black Holes
- Light curve modelling • Survey Science.

## Experience

### Postdoctoral Fellow

NATIONAL CENTRE FOR RADIO ASTROPHYSICS - TATA INSTITUTE OF FUNDAMENTAL RESEARCH (NCRA-TIFR)

Pune, India

Jul 2024 - present

### Postdoctoral Fellow

MANIPAL CENTRE FOR NATURAL SCIENCES (MCNS)

Manipal, India

### Project Associate (Scientific)

ARYABHATTA RESEARCH INSTITUTE OF OBSERVATIONAL SCIENCES (ARIES)

Nainital, India

Apr 2022 - Oct 2023

### Senior Research Fellow (SRF)

ARYABHATTA RESEARCH INSTITUTE OF OBSERVATIONAL SCIENCES (ARIES)

Nainital, India

Mar 2020 - Jul 2021

### Junior Research Fellow (JRF)

ARYABHATTA RESEARCH INSTITUTE OF OBSERVATIONAL SCIENCES (ARIES)

Nainital, India

Mar 2018 - Feb 2020

## Education

### Doctor of Philosophy (Ph.D.) in Astrophysics

ARYABHATTA RESEARCH INSTITUTE OF OBSERVATIONAL SCIENCES (ARIES)

Nainital, India

2018–2023

- Thesis: *Investigating the Nature and Structure of the Inner Regions in Active Galactic Nuclei.*
- Awarded by **Deen Dayal Upadhyaya Gorakhpur University**, Gorakhpur (Feb 2024).
- Advisors: Prof. **Hum Chand** (Supervisor) and Prof. **Shantanu Rastogi** (Co-supervisor).

### Master of Science (M.Sc.) in Physics

BANARAS HINDU UNIVERSITY (BHU)

Varanasi, India

2015–2017

- First-class graduate with specialization in **Space Physics**.
- Dissertation: *Study of Properties of CsI as a Photocathode for UV Astronomy Purposes.*
- Advisor: Prof. **B.K. Singh**.

### Bachelor of Science (B.Sc.) (Hons.) in Physics

UNIVERSITY OF DELHI

New Delhi, India

2011–2014

- Graduated with **First Class** from Deshbandhu College.

## Technical Skills

- Proficient in **Python**; working knowledge of **IDL**.
- Experience with Git for version control.
- Data reduction using **IRAF** and **Astropy** packages (including CCDPROC, PHOTUTILS, etc.)
- Developed a custom photometry pipeline in **Python**.

- Proficient in  $\text{\LaTeX}$ , HTML, and Markdown.
- Experience in developing and maintaining static websites.
- Operating Systems: **Linux, Windows**.

## Professional Memberships

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- Roman Space Telescope: Member of the Time Domain Astronomy Working Group (ROMANTDAWG) and the Software Working Group (ROMANSOFTWAREWG).
- Rubin-LSST: Member of the Galaxies Science Collaboration and the AGN Science Collaboration.
- Life member of the Astronomical Society of India (ASI).

## Awards & Fellowships

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- **2023:** Awarded *International Travel Support (ITS)* by DST, Govt. of India, for a conference in Italy.
- **2018:** Junior Research Fellowship (JRF), DST, Govt. of India.
- **2017:** Qualified **Graduate Aptitude Test in Engineering (GATE)** – Physics and **Joint Entrance Screening Test (JEST)** – Physics, an entrance exam for Ph.D. programs in Indian research institutes.
- **2016:** Awarded *Space Science Promotion Scheme (SSPS)* Fellowship by ISRO (1 year).

## Teaching & Mentoring Experience

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- **2024–present:** Mentoring two PhD students: Mr. Himanshu (since 2024) and Mr. Anshul Sharma (since 2025) at CUHP-Dharamshala.
- **2024:** Judge at Kendriya Vidyalaya (KV) Regional Science Exhibition, Pune (about 300 student projects from 69 schools).
- **2024:** Teaching Assistant for *Introduction to Astrophysics* (M.Sc. & Ph.D.), MCNS, Manipal.
- **2023:** Co-supervised M.Sc. dissertation of Mr. Jayesh Saraswat, SPPU, Pune, now a PhD student at MCNS-MAHE.
- **2022:** Mentored 6 students during ARIES Training School on Observational Astronomy (ATSOA), May 2022.
- **2021:** Supervised M.Sc. dissertation of Mr. Dharmendra, CUHP, Dharamshala, now a PhD student at CUHP-Dharamshala.
- **2019:** Mentored 7 students at ATSOA, March 2019.

## Leadership and Outreach

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- **2025:** Invited Speaker, **National Space Day Celebrations**, Kendriya Vidyalaya, Ganeshkhind, Pune (23 Aug).
- **2024:** SOC Member, **Young Astronomers' Meet (YAM)**, CHRIST University, Bengaluru (06–09 Mar). [link]
- **2024:** Responsible for organizing scientific seminars at MCNS, Manipal (Feb-Jun 2024).
- **2022:** Chair, **YAM**, ARIES Nainital (09–13 Nov). [link]
- **2021:** Co-founded **CosmicVarta**, a web portal for public astrophysics outreach. [link]
- **2021:** Assisted in organising **ARIES National Science Day** events, online (28 Feb). [link]
- **2020:** Assisted in organising **ARIES e-lecture series**, in lieu of ATSOA due to COVID-19. [link]

## Telescope Experience

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- Extensive observational experience with **ARIES** 1.04m, 1.3m, and 3.6m optical telescopes (~100 nights cumulative).
- Remote observation experience with **Thai Robotic Telescopes (TRT)** and **Growth India Telescope (GIT)**.

- Experience working with large surveys and archival data, including **Rubin/LSST, SDSS, ZTF, HSC-SSP, and SWIFT** datasets.
- Served as a peer reviewer for GMRT proposals; NCRA-TIFR, India.

## Accepted Telescope Proposals

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- **2.0m Himalayan Chandra Telescope (HCT):**

*Study of Changing Look AGN using spectroscopic and photometric observations* (Cycles 2025-C1, 2025-C2, 2025-C3) – Co-I, PI: Arya Sudhakaran.

- **GROWTH India Telescope (GIT):** *Accretion disk reverberation mapping of AGN* (Cycles 2022-C1, C2, C3, 2023-C1, C2) – Co-I, PI: Ravi Joshi.

- **1.3m J C Bose Telescope (JCBT):** *Photometric reverberation mapping of low-luminosity AGNs* (Cycle 2022-C1) – Co-I, PI: Ravi Joshi.

- **3.6m Devasthal Optical Telescope (DOT):**

– *In search of luminous quasars at the cosmic dawn* (Cycle 2020-C2) – PI.

– *Host galaxy imaging of  $\gamma$ -ray detected NLSy1 galaxies* (Cycles 2020-C2, 2021-C1, C2) – Co-I, PI: Vineet Ojha.

- **VLT-ESO:** *Dissecting baryon cycle in overdense environments* (Cycle P106) – Co-I, PI: Ravi Joshi.

- **1.04m Sampurnanand Telescope (ST):**

– *Intra-night polarization variability of  $\gamma$ -ray detected NLSy1 galaxies* (Cycle 2020-B) – PI.

– *Changing look active galaxies: AGN host and environment's role* (Cycle 2020-B) – PI.

– *Multi-wavelength photometry of low-redshift BL Sy1 galaxies* (Cycles 2018-B, 2019-A, 2020-A) – PI.

- **Thai Robotic Telescope (TRT):** *Photometric reverberation mapping of AGN accretion disk* (Cycles 8A, 7D, 7C) – PI.

- **ASTROSAT:** *Accretion disk reverberation mapping of MRK 817* (Cycle A11) – PI.

- **1.3m Devasthal Fast Optical Telescope (DFOT):** *Photometric reverberation mapping using H-beta emission* (Cycles 2019-A, 2019-B, 2020-A) – PI.

## Conferences, Seminars, and Workshops

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Over **30 presentations** at international and national meetings, including invited talks, colloquia, and LSST community events.

- 2025**
- Poster at the 4th BINA Workshop, University of Calicut, India
  - Seminar, University of Birmingham, United Kingdom.
  - Invited Talk, University of Southampton, United Kingdom.
  - Invited Talk, Max Planck Institute for Extraterrestrial Physics, Garching, Germany.
  - Talk, LSST@Europe7, Poznań, Poland.
  - Tutorial on Rubin Data Preview 1 (DP1), Pune–Mumbai Cosmology and Astro-Particle Meeting, IISER Pune, India.
  - Talk, Rubin Community Workshop, Tucson, USA (online).
  - Talk, Rubin Galaxies Science collaboration telecon.
  - Colloquium, NCRA–TIFR, India.
  - Talk, RETCO Meeting, IIT Indore, India.
  - Talk, 43rd Astronomical Society of India Meeting, NIT Rourkela, India.
  - Participant, AI/ML Applications in Astronomy & Astrophysics, IUCAA, Pune, India.
- 2024**
- Talk, Advancements in AGN and Galaxy Cluster Research, CUHP, Dharamshala, India.

- Poster, 42nd Astronomical Society of India Meeting, IISc Bengaluru, India.
  - Talk, Regional Astronomers' Meet, MCNS Manipal, India.
  - Participant, LSST@Europe6, La Palma, Spain (online).
  - Participant, Pune–Mumbai Cosmology and Astro-Particle Meeting, TIFR, Mumbai, India.
- 2023**
- Talk, IUCAA, Pune, India.
  - Talk, APRIM, Fukushima, Japan (online).
  - Poster, The Restless Nature of AGN: 10 Years Later, Naples, Italy.
  - Talk, Multidisciplinary Approach to Understand the Mysteries of our Universe, NIT Rourkela, India (online).
  - Talk, 3rd BINA Workshop, Graphic Era Hill University, Bhimtal, India.
  - Talk, 41st Astronomical Society of India Meeting, IIT Indore, India.
  - Talk, Deen Dayal Upadhyaya Gorakhpur University, Gorakhpur, India (online).
- 2022**
- Talk, ARIES Training School in Observational Astronomy, Nainital, India.
  - Poster, 40th Astronomical Society of India Meeting, IIT Roorkee, India.
  - Talk, Central University of Himachal Pradesh (CUHP), Dharamshala, India.
- 2021**
- e-Poster, Multi-object Spectroscopy for Statistical Measures of Galaxy Evolution, STScI, USA (online).
  - Participant, International Summer School: The ISM of Galaxies, online.
- 2020**
- Talk, Astronomical Surveys and Big Data 2, BAO, Armenia (online).
  - Participant, ILMT Workshop, ARIES, Nainital, India.
  - Participant, Investigating the Stellar Variability and Star Formation, ARIES, Nainital, India.
- 2019**
- Poster, Mapping Central Regions of Active Galactic Nuclei, Guilin, China.
  - Participant, I-TMT Science and Instruments Workshop, ARIES, Nainital, India.

## Academic Visits

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- New York University, Abu Dhabi campus, United Arab Emirates (October 2025).
- University of Southampton, United Kingdom (October 2025).
- University of Birmingham, West Midlands, United Kingdom (October 2025).
- Max Planck Institute for Extraterrestrial Physics, Garching, Germany (September 2025).
- Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune India (Oct-Nov 2023).

## Publications

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8 refereed publications (5 first-author); 3 manuscripts currently under revision or submission. [Click here to visit the ADS link to my publications](#).

### REFEREED

1. **Vivek Kumar Jha**, Ravi Joshi, Jayesh Saraswat, Hum Chand, Sudhanshu Barway and Amit Kumar Mandal; Exploring the AGN Accretion Disks using Continuum Reverberation Mapping. *Bulletin of Liège Royal Society of Sciences*, 93(2), 766–779, 2024.
2. Ailawadhi, Bhavya (et al. including **Vivek Kumar Jha**); Photometric and Spectroscopic Analysis of the Type II Short Plateau SN 2020jfo. *Monthly Notices of the Royal Astronomical Society*, Volume 519, Issue 1, 2023.
3. Vineet Ojha, **Vivek Kumar Jha**, Hum Chand, Veeresh Singh; Evidence of Jet induced Optical Microvariability in Radio-loud Narrow Line Seyfert 1 Galaxies. *Monthly Notices of the Royal Astronomical Society*, Volume 514, Issue 4, 2022.

4. **Vivek Kumar Jha**, Ravi Joshi, Hum Chand, Xue-Bing Wu, Luis C Ho, Shantanu Rastogi, Quinchun Ma; Accretion Disk Sizes from Continuum Reverberation Mapping of AGN Selected from the ZTF Survey. *Monthly Notices of the Royal Astronomical Society*, Volume 511, Issue 2, 2022.
5. **Vivek Kumar Jha**, Hum Chand, Vineet Ojha, Amitesh Omar, and Shantanu Rastogi; A comparative study of the physical properties for a representative sample of Narrow and Broad-line Seyfert galaxies. *Monthly Notices of the Royal Astronomical Society*, Volume 510, Issue 3, 2022.
6. **Vivek Kumar Jha**, Hum Chand, and Vineet Ojha; Properties of Broad and Narrow Line Seyfert galaxies selected from SDSS. *Communications of the Byurakan Astrophysical Observatory (ComBAO)*, Volume 67, Issue 2, 2020.
7. Nabeel Jammal, Richa Rai, Triloki, **Vivek Kumar Jha** and B.K. Singh; The impact of humidity and film thickness on photoemission, optical and morphological properties of CsI thin film photocathodes. *Thin Solid Films*, Volume 674, pp:82-90, 2019.
8. **Vivek Kumar Jha**, Nabeel Jammal, Triloki and B K Singh; Optical properties of "as-deposited" CsI photocathode in the VUV-UV spectral range. *Proceedings of the DAE Symposium on Nuclear Physics* Volume 62, pp:1082, 2017.

#### SUBMITTED

1. **Vivek Kumar Jha**, Debbijoy Bhattacharya and Hum Chand; *Exploring the Origins of Optical Variability in AGNs: Correlations with Black Hole Properties, X-ray, and Radio Emission*. (under revision in ApJ)
2. **Vivek Kumar Jha**, Anshul Kumar Sharma, Hum Chand, and Madhu Sudan; *Probing Jet-Induced Optical Variability Across Timescales in Radio-Loud NLSy1 Galaxies*. (under revision in MNRAS Letters)
3. Himanshu Sharma, **Vivek Kumar Jha**, Hum Chand, and Swayamtrupta Panda *Do Low-Mass, Low-Luminosity AGNs Deviate from the Quasar Main Sequence?* (to be submitted to MNRAS)