

# Aishrila Mazumder

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## Employment

### Post Doctoral Research Associate

Manchester, UK

Jodrell Bank Centre for Astrophysics, The University of Manchester

September 2022 -present

- Developed analysis pipeline for power spectrum domain averaging of the 21-cm observations
- Modified and improved sensitivity forecasts for upcoming radio surveys

## Education

### Indian Institute of Technology Indore, India

July 2017-April 2023

PhD in Astrophysics

- **Thesis:** Characterization of Foregrounds and Systematics for Sensitive Radio Observations
- Advisor: Prof. Abhirup Datta

### Banaras Hindu University, India

July 2014-June 2016

Master of Science in Physics

- **Thesis:** Dark Matter Direct Detections
- **Advisor:** Dr. V.S. Subrahmanyam

### University of Calcutta, India

July 2011-June 2014

Bachelor of Science in Physics

- Passed with First Class Honours

## Academic Roles

- **Scientific Collaborations:** MIGHTEE, MeerKLASS
- **Scientific Referee:** Monthly Notices of the Royal Astronomical Society
- **Proposal Reviewer:** uGMRT Time Allocation Committee
- **Co-organiser:** JBCA Weekly Colloquium at The University of Manchester
- **Member:** SKAO Cosmology Science Working Group and Epoch of Reionization Science Working Group

## Achievements

- **Completed SKA SDC3A as a part of Team Hamster** March-Oct 2023
- **PI:** Proposal on pilot survey of GAMA-23 field using Band-2 of uGMRT awarded 8 hour observation time April 2022
- **Completed SKA SDC2 as a part of Team Spardha** Jan-Jul 2021
- **co-I:** Proposal on follow-up survey of ELAIS N1 field using Band-2 of uGMRT awarded 24 hour observation time September 2021
- Awarded Teaching Assistantship from MHRD, Government of India Jul 2017-Jul 2022

## Supervision

- **Co-supervisor:** Undergraduate summer intern under Student Experience Intern offered by the University of Manchester June-Aug 2024
- **Co-supervisor:** Two undergraduate interns for the Summer Internship May-Jul 2021

offered by the Indian Academy of Sciences

- **Supervisor:** Two undergraduate interns for the Winter Internship offered by the Indian Institute of Technology Indore *Dec 2019-Feb 2020*
- **Supervisor:** High school student on short-term research project under Vigyan Jyoti Scheme of DST, Government of India *Aug-Sept 2018*

## Teaching

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- **Teaching Assistant:** 1st year undergraduate course “Introduction to Astronomy” *Autumn 2019*
- **Teaching Assistant:** 1st year masters course “Radio Astronomy” *Spring 2019*
- **Teaching Assistant:** 1st year masters course “General Relativity and Cosmology” *Autumn 2018*

## Selected Talks

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- CASTLE - Cosmological and Astrophysical Synergies: Tactics for the Latest Era-2024, Tagliolo Monferrato, Italy *September 2024*  
*Cosmology with HI Intensity Mapping on Small Scale*
- MeerKAT@5, Stellenbosch University, South Africa *February 2024*  
*21-cm Intensity Mapping with MeerKAT Surveys*
- Towards the SKAO: Partnerships and Africa’s role in the next generation of global radio astronomy, University of Bristol, Bristol, UK *September 2023*  
*HI Intensity Mapping with the MIGHTEE Survey*
- SAZERAC 21cm 2022, online *March 2022*  
*End-to-end Simulation Pipeline for Sensitive Interferometric Observations*
- Science At Low Frequencies (SALF), online *December 2021*  
*A 325 MHz Survey of the Lockman Hole Field using the GMRT*
- First Billion Years of the Universe Using Next Generation Telescopes, Indian Institute of Technology Indore, India *January 2020*  
*End-to-end simulation of the 21-cm signal recovery prowess of the SKA*

## EDI and Outreach

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- **Committee member and co-organiser:** EquiTea - the monthly EDI forum at JBCA *2023-present*
- **Member:** JBCA team at the Universally Manchester Festival held at the University of Manchester *June 2024*
- **Scientific Expert:** SKA UK outreach project *May 2024*
- **Member:** JBCA team at the Bluedot Festival held at the Jodrell Bank Observatory, Cheshire, UK *July 2023*
- **Scientific Expert:** IIT Indore team at the National Science Day Outreach Programme in virtual mode *February 2021*

## Conference Organizations

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- **SOC and LOC member:** MeerKLASS Busy Week held at the University of Manchester on September 2024
- **LOC member:** SKAO Cosmology Science Working Group Annual Meeting held at the University of Manchester on September 2022
- **LOC member:** First Billion Years of the Universe Using Next Generation Telescopes held at Indian Institute of Technology Indore, on January 2020
- **LOC member:** “Reaching for the Stars” event organised at IIT Indore *January 2019*  
under 100 Hours Of Astronomy Global Project of the International Astronomical Union

## Publications

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### **Intensity Mapping with the MIGHTEE Survey: First Results of the HI Power Spectrum**

**Aishrila Mazumder**, Laura Wolz, Zhaoting Chen, Sourabh Paul, Mario Santos, Matt Jarvis, Junaid Townsend, Srikrishna Sekhar, Russ Taylor

*Under Review in Monthly Notices of the Royal Astronomical Society*

[2501.17564](#) [↗](#)

### **MeerKLASS L-band deep-field intensity maps: entering the HI dominated regime**

MeerKLASS Collaboration, et al. including **Aishrila Mazumder**

*Accepted for publication in Monthly Notices of the Royal Astronomical Society*

[2407.21626](#) [↗](#)

### **Ionospheric effect on the synthetic Epoch of Reionization observations with the SKA1-Low**

Samit Kumar Pal, Abhirup Datta, **Aishrila Mazumder**

*Accepted for publication in Journal of Cosmology and Astroparticle Physics*

[2407.17573](#) [↗](#)

### **Detecting the HI power spectrum in the post-reionization Universe with SKA-Low**

Zhaoting Chen, Emma Chapman, Laura Wolz, **Aishrila Mazumder**

*Monthly Notices of the Royal Astronomical Society, vol. 524, no. 3, pp. 3724–3740, September 2023*

[2302.11504](#) [↗](#)

### **SKA Science Data Challenge 2: analysis and results**

Philipa Hartley, Anna Bonaldi, Robert Braun, et.al., including **Aishrila Mazumder**

*Monthly Notices of the Royal Astronomical Society, vol. 523, no. 2, pp. 1967–1993, August 2023*

[2303.07943](#) [↗](#)

### **Synthetic observations with the Square Kilometre Array: Development towards an end-to-end pipeline**

**Aishrila Mazumder**, Abhirup Datta, Mayuri Sathyanarayana Rao, Arnab Chakraborty, Saurabh Singh, Anshuman Tripathi, Madhurima Choudhury

*Journal of Astrophysics and Astronomy, vol. 44, no. 1, June 2023*

[2211.04302](#) [↗](#)

**A study on the clustering properties of radio-selected sources in the Lockman Hole region at 325 MHz**

**Aishrila Mazumder**, Arnab Chakraborty, Abhirup Datta

*Monthly Notices of the Royal Astronomical Society*, vol. 517, no. 3, pp. 3407-34223, December 2022

2208.00992 [🔗](#)

**Detecting galaxies in a large H I spectral cube**

Abinash Kumar Shaw, Manoj Jagannath, **Aishrila Mazumder**, Arnab Chakraborty, Narendra Nath Patra, Rajesh Mondal, Samir Choudhuri

*Journal of Astrophysics and Astronomy*, vol. 43, no. 2, December 2022

2211.02041 [🔗](#)

**Observing the reionization: effect of calibration and position errors on realistic observation conditions**

**Aishrila Mazumder**, Abhirup Datta, Arnab Chakraborty, Suman Majumdar

*Monthly Notices of the Royal Astronomical Society*, vol. 515, no. 3, pp. 4020-4037, September 2022

2207.06169 [🔗](#)

**A Comparative Analysis to Deal with Missing Spectral Information Caused by RFI in Cosmological H I 21 cm Observations**

Arnab Chakraborty, Abhirup Datta, **Aishrila Mazumder**

*The Astrophysical Journal*, vol. 929, no. 1, April 2022

2203.04994 [🔗](#)

**Characterizing EoR foregrounds: a study of the Lockman Hole region at 325 MHz**

**Aishrila Mazumder**, Arnab Chakraborty, Abhirup Datta, Samir Choudhuri, Nirupam Roy, Yogesh Wadadekar, C.H. Ishwara-Chandra

*Monthly Notices of the Royal Astronomical Society*, vol. 495, no. 4, pp. 4071-4084, July 2020

.2005.05205 [🔗](#)