Aishrila Mazumder

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Personal Details

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Date of Birth	January 08, 1992

Education

2014-2016 **Master of Science in Physics**, *Department of Physics, Institute of Science*, Banaras Hindu University, Varanasi, India.
Thesis : Dark Matter Direct Detection ; Supervisor: Dr. V.S. Subrahmanyam

2011-2014 **Bachelor of Science with Honours in Physics**, *Serampore College*, University of Calcutta, Kolkata, India.

Current Position

July 2017 - present **PhD Scholar**, *Department of Astronomy, Astrophysics and Space Engineering*, Indian Institute of Technology Indore, Indore, Madhya Pradesh,India.
Thesis Supervisor : Dr.Abhirup Datta

Research Interest

21cm Cosmology Statistical detection of redshifted 21-cm signal from the Epoch of Reionization and Post-Reionization era

Radio Astronomy Analysis and imaging of radio telescope data; development of simulation pipeline for analysis of performance of upcoming radio telescopes (pertaining especially to observation of redshifted 21-cm signal from early Universe); quantifying tolerance of real observational errors for sensitive observations

Observational Astrophysics and Cosmology

Continuum study of deep fields for foreground characterization (for 21-cm cosmological observations) using radio astronomical data, compact sources and diffuse synchrotron radiation, statistics of astrophysical source distributions, large scale structures

Publications/Preprints

Refereed

1. "*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, Volume 495, Issue 4, July 2020, https://doi.org/10.1093/mnras/staa1317; arXiv: 2005.05205
2. "*A Comparative Analysis To Deal With Missing Spectral Information Caused By RFI In Cosmological HI 21 cm Observations*", Arnab Chakraborty, Abhirup Datta, **Aishrila Mazumder**, The Astrophysical Journal, Volume 929, Issue 1, April 2022, https://doi.org/10.3847/1538-4357/ac5cc5; arXiv: 2203.04994

Under Review

1. "Observing the Reionization: Effect of Calibration and Position Errors on Realistic Observation Conditions", **Aishrila Mazumder**, Abhirup Datta, Arnab Chakraborty, Suman Majumdar, ***under review in the Monthly Notices of the Royal Astronomical Society***
2. "A study on the Clustering Properties of Radio-Selected sources in the Lockman Hole Region at 325 MHz", **Aishrila Mazumder**, Arnab Chakraborty, Abhirup Datta, ***under review in the Monthly Notices of the Royal Astronomical Society***

Peer-Reviewed Conference Proceedings

1. "An End-to-end Pipeline for HI 21cm Cosmological Observations", **A . Mazumder**, A. Datta , Proceedings of URSI-GASS 2021
2. "The Effect of Instrumental Systematic Errors on the Sensitive observations of redshifted 21-cm Signal from Cosmic Dawn and Epoch of Reionization", **A. Mazumder**, A. Datta and A. Chakraborty, Bulletin of the AAS, 52(3), 2020
3. "Probing the First Structures with the SKA", **A. Mazumder** and A. Datta, 2019 URSI Asia-Pacific Radio Science Conference (AP-RASC), New Delhi, India, 2019, pp. 1-2, 10.23919/URSIAP-RASC.2019.8738734

4. "Investigating Signal Recovery Challenges from Cosmic Dawn and Reionisation using SKA-1 Low", A. Chakraborty, **A. Mazumder** and A. Datta, 2019 URSI Asia-Pacific Radio Science Conference (AP-RASC), New Delhi, India, 2019, pp. 1-2, 10.23919/URSIAP-RASC.2019.8738412

Awards & Achievements

January-July 2021	Completed SKA SDC2 as a part of Team Spardha occupying 8th position in the leaderboard
December 2017	CSIR-UGC NET Lecturership in Physics (All India Rank : 56)
July 2017-present	Recipient of MHRD Teaching Assistantship from Indian Institute of Technology Indore

Computer Skills

Programming Languages	Python FORTRAN(basic)
Field-specific Scientific Packages	Common Astronomy Software Applications (CASA), OSKAR, 21cmFAST, 21CMMC, TreeCorr, Source Peeling and Atmospheric Modelling (SPAM), PyBDSF, Aegean
OS & Tools	Linux, Windows, MS Office, LaTeX
Version Control	Git

Accepted Observation Proposals

Proposal ID: 42_034	Awarded 8 hours observation time at uGMRT for pilot proposal titled *Observing GAMA-23 field with uGMRT Band-2: a Pilot study* **(PI)**
Proposal ID: 41_099	Awarded 24 hours observation time at uGMRT for proposal titled *Characterizing Foregrounds in 21cm Cosmology Observations: Pilot Study with the uGMRT at 120 - 240 MHz* **(co-I)**

Teaching & Mentoring

May-July 2021	Mentored two undergraduate students for Summer Internship
December 2019-February 2020	Mentored an undergraduate student for Winter Internship
Autumn 2019	Teaching Assistant for Introduction to Astronomy (AA-201)
Spring 2019	Teaching Assistant for Radio Astronomy (AA- 474/674N)
Autumn 2018	Teaching Assistant for General Relativity and Cosmology (AA-671)
June 2018	Mentored one school student for short term research project under Vigyan Jyoti Scheme of DST, Government of India

Spring 2018 Teaching Assistant for B.Tech. 1st Year Laboratory Course (PH-156)

Outreach and Miscellaneous

- Member of the team conducting National Science Day in virtual mode organised by Indian Institute of Technology Indore held on February 28, 2021
- LoC Member for "First Billion Years of the Universe Using Next Generation Telescopes" held at Indian Institute of Technology Indore held between January 20 - January 31, 2020
- IEEE student member & Secretary, IEEE IIT Indore Student Branch (March 2019 - December 2020)
- Member of organising committee for "Reaching for the Stars" as a part of "100 Hours Of Astronomy Global Project" conducted by the International Astronomical Union IAU, held at IIT Indore on January 2019
- Member of organising committee for Astronomy outreach event for 300 school students as a part of the "Bapu Khagol Mela" held at IIT Indore on December 2018
- Member of organising committee for Astronomy outreach event on "Lunar Eclipse/Copper Moon" for school students held at IIT Indore on January 2018

Presentations

March 2022 Contributed Poster on "A GMRT Survey of Lockman Hole Field at 325 MHz", 40th Annual Meeting of the Astronomical Society of India (ASI), Indian Institute of Technology Roorkee, Roorkee, India

March 2022 Contributed Talk on "End-to-end Simulation Pipeline for Sensitive Interferometric Observations", SAZERAC 21cm 2022, online

February 2022 Contributed Talk on "A 325 MHz Survey of the Lockman Hole Field using the GMRT", National Space Science Symposium (NSSS) 2022, online

December 2021 Contributed Lighting Talk in "A 325 MHz Survey of the Lockman Hole Field using the GMRT", Science At Low Frequencies (SALF), online

November 2021 Contributed Talk on "A 325 MHz Survey of the Lockman Hole Field using the GMRT", SPARCS X 2021 - Capturing Science from the Pathfinder Survey Data, online

March 2021 Contributed Talk on "Effect of Calibration and Position Errors on the recovery of cosmological 21-cm Signal using Sensitive Radio Interferometers", A precursor view of the SKA sky, online

February 2021 Contributed Poster on "Study of the Lockman Hole Region at 325 MHz", 39th Annual Meeting of the Astronomical Society of India (ASI), online

June 2020 Contributed iPoster Plus on "The Effect of Instrumental Systematic Errors on the Sensitive observations of redshifted 21-cm Signal from Cosmic Dawn and Epoch of Reionization", 236th Annual Meeting of the American Astronomical Society, online

January 2020 Contributed Talk on "End-to-end simulation of the 21-cm signal recovery prowess of the SKA", First Billion Years of the Universe Using Next Generation Telescopes, Indian Institute of Technology Indore, Indore, India

March 2019 Contributed Poster on "Probing the First Structures with the SKA" & "Investigating Signal Recovery Challenges from Cosmic Dawn and Reionisation using SKA-1 Low", URSI AP-RASC, New Delhi, India

February 2019 Contributed Poster on "Epoch of Reionisation with the Square Kilometer Array : Challenges", 37th Annual Meeting of the Astronomical Society of India (ASI), Christ University, Bengaluru, India

November 2018 Contributed Poster on "Cosmic Reionization with the Square Kilometre Array", Exploring the Universe: Near Earth Space Science to Extra-Galactic Astronomy, SNBNCBS, Kolkata, India

November 2018 Contributed Talk on "Computational Challenges for Large Aperture Arrays", Computational Mathematics in Nanoelectronics and Astrophysics, IIT Indore, Indore, India

February 2018 Contributed Poster on "Cosmic Reionization with SKA1-Low – Simulations", 36th Annual Meeting of the Astronomical Society of India (ASI), Osmania University, Hyderabad, India

School/Workshop

January 2020 Co-instructor for tutorial on Radio Astronomy data analysis in the School on "First Billion Years of the Universe Using Next Generation Telescopes" held at Indian Institute of Technology, Indore

December 2018 Participated in school on "Frontiers on 21 cm Cosmology" held at Kodaikanal Solar Observatory, Kodaikanal, India

December 2017 Participated in workshop on "Universe after the first 200 million years: Cosmic Dawn, Reionization and post reionization with 21cm " held at Presidency University, Kolkata, India

July 2017 Participated in Radio Astronomy School (RAS) held at NCRA TIFR, Pune, India

Languages

- English (Fluent)
- Bengali (Mother tongue)
- Hindi (Fluent)
- Spanish (Rudimentary)

References

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Declaration

I hereby declare that the above information furnished is correct to the best of my knowledge.

Aishrila Mazumder