

Arnab Chakraborty

Dunlap Fellow

Contact Information

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Employment

Dunlap Postdoctoral Fellow

September 2026 – August 2029

Dunlap Institute for Astronomy and Astrophysics, University of Toronto, Ontario, Canada.

Trottier Chair Fellow

November 2021 – August 2026

Department of Physics & Trottier Space Institute, McGill University, Montreal, Canada.

Education

Ph.D. in Astrophysics & Cosmology	July 2016 - September 2021 Department of Astronomy, Astrophysics and Space Engineering Indian Institute of Technology, Indore Supervisors: Abhirup Datta
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Master Degree in Physics	September 2013 - August 2015 University of Burdwan, Burdwan, India Master Thesis: Secondary Anisotropies in Cosmic Microwave Background Supervisor: Sarbeswar Chaudhuri
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Bachelor Degree in Physics	August 2010- July 2013 Asutosh College, University of Calcutta, Kolkata, India
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Research Profile

I am a radio astronomer and observational cosmologist working on 21 cm intensity mapping, large-scale structure, and foreground mitigation, with leadership roles in CHIME and upcoming CHORD. I am the lead author of the first cosmological 21 cm auto-power spectrum detection at $z \sim 1$. I also led the group - Akashganga, within SKA-India, to participate in the SKA foreground challenge. I have also worked with uGMRT during my Ph.D. and developed the calibration, RFI flagging, imaging and power spectrum estimation pipeline.

Summary of Research Work

Ph.D. (IIT Indore, 2016–2021) — Foreground characterization and post-reionization 21 cm intensity mapping with the uGMRT. I single-handedly developed the complete wideband calibration, imaging and power-spectrum pipeline for the upgraded GMRT, India's SKA pathfinder. Using it, I produced the deepest image of the ELAIS-N1 field at 300–500 MHz and, for the first time from interferometric data, measured the spectral evolution of diffuse Galactic synchrotron emission. I statistically characterized Galactic and extragalactic foregrounds, quantified the angular and spatial clustering of radio AGN and star-forming galaxies and

their host-halo masses, and placed the first multi-redshift upper limits on the post-reionization 21 cm power spectrum ($z = 1.96\text{--}3.58$), constraining the neutral-hydrogen abundance and bias $[\Omega_{\text{HI}}b_{\text{HI}}]$. This established the uGMRT’s capability as an SKA pathfinder for 21 cm cosmology.

Postdoc (McGill / Trottier Space Institute, 2021–2026) — 21 cm intensity mapping with CHIME and CHORD. As science lead within the CHIME collaboration, I designed and built the analysis pipeline — adaptive RFI mitigation, achromatic beamforming, and foreground filtering, and a comprehensive validation suite that delivered the first detection of the cosmological 21 cm auto-power spectrum at $z > 1$ (12.4σ at $z \sim 1.16$). I co-led the companion interpretation paper constraining the HI abundance and clustering against IllustrisTNG. Earlier, using the uGMRT, I reported the first detection of HI 21 cm emission from a gravitationally lensed galaxy at $z \sim 1.3$. I am a commissioning-team member for CHORD (calibration and intensity-mapping), and I lead the “Akashganga” group within SKA-India.

Research Interests

Cosmology: Cosmological data analysis, HI 21cm Intensity Mapping, Baryon Acoustic Oscillation, Epoch of Reionization and Cosmic Dawn, large scale structure

Radio astronomy: Developing pipeline to calibrate and imaging of radio interferometric low-frequency data, direction-dependent calibration, radio frequency interference (RFI) flagging.

Foreground Characterization: Modelling the emission of Galactic and extragalactic foregrounds, Compact sources and diffuse synchrotron radiation, foreground suppression and avoidance techniques.

Strong Gravitational Lensing: HI 21cm emission line from distant galaxies, strongly lensed by foreground galaxies, star formation history

Interface of Astrophysics and Cosmology: Radio continuum study of deep fields at low-frequency, studying clustering properties of sources, Active Galactic Nuclei, Star-Forming Galaxies, continuum study of Galactic plane at 1.4 GHz and 5 GHz.

Honors & Awards

- Dunlap Postdoctoral Fellowship, Dunlap Institute for Astronomy and Astrophysics, University of Toronto, September 2026 to August 2029.
- Brockhouse prize from NSERC, November 2024.
- Trottier Chair Fellowship, McGill University, November 2021 to August 2025.
- Young Scientist Award at URSI-GASS 2021
- DST Inspire Fellowship for Ph.D, July 2016 to September 2021
- Scholarship for Higher Education (SHE) by DST-Inspire, October 2010 to October 2015

Accepted observational proposals

upgraded Giant Metrewave Radio Telescope (uGMRT):

- Characterizing Foregrounds in 21cm Cosmology Observations: Pilot Study with the uGMRT at 250-500 MHz, **ID:** 32_120
- Characterizing Foregrounds in 21cm Cosmology Observations: Pilot Study with the uGMRT at 120-240 MHz, **ID:** 34_141
- Characterizing Foregrounds in 21cm Cosmology Observations with the uGMRT at 120 - 240 MHz - Phase 1, **ID:** 41_099
- Characterizing Foregrounds in 21cm Cosmology Observations with the uGMRT at 120 - 240 MHz - Phase 2, **ID:** 43_077
- Characterizing Foregrounds in 21cm Cosmology Observations with the uGMRT at 120 - 240 MHz - Phase 3, **ID:** 46_016
- The search for redshifted HI signal in redshift range 1.8 - 3.7 with the uGMRT, **ID:** 45_124
- Towards 21-cm intensity mapping at $1.8 < z < 3.7$ with uGMRT, **ID:** 46_032
- Characterising Foregrounds in 21cm Cosmology Observations with the uGMRT Band-2: Phase 3. **ID:** 46_106
- A uGMRT Band-2 Search for the 21-cm Forest 1D Power Spectrum at $z = 5.8$. **ID:** 50_010
- The search for potential fields for SKA-Low EoR experiments through deep GMRT observations **ID:** 50_144

Students Advised

- Aishrila Mazumder, IIT Indore, Ph.D, December 2017 to November 2022.
Project title: “Characterization of Foregrounds and Systematics for Sensitive Radio Observations”
Initially post-doc at the University of Manchester; now at Shanghai Astronomical Observatory.
- Akriti Sinha, IIT Indore, Ph.D, July 2018 to February 2024.
Project title: “Star-formation in Radio Deep Fields: a Multi-wavelength Perspective”
Initially a postdoctoral researcher at Thüringer Landessternwarte Tautenburg, Germany; now at the Max Planck Institute for Solar System Research (MPS).

- Rashmi Sagar, IIT Indore, Ph.D, May 2021 to present.
Project title: “Characterizing Foregrounds and constraint on HI 21cm signal from Epoch of Reionization with uGMRT.”
- Kyle Miller, McGill University, Master student, Fall 2023 to present.
project title: “OH megamaser search with CHIME”
Now working in industry.

Teaching and Mentoring Experience

Experience teaching graduate-level radio astronomy, supervising PhD and MSc students, and delivering international summer-school lectures.

- Teaching Assistant, Radio Astronomy, IIT Indore, 2017-2019
Taught basics of Radio Astronomy and Radiative Transfer to the Master Students and first-year Ph.D students in their course-work.
- Computer lab assistant, Radio data analysis and astrostatistics, IIT Indore, 2018-2019
Take computational lab course and taught radio data analysis: Calibration, RFI flagging and imaging using CASA.
- Tutorial on data analysis in school “Frontiers in 21 cm Cosmology” held at Kodaikanal Solar Observatory, December 2018
Take a tutorial on calibration and imaging of radio data and power spectrum estimation from it.
- Take tutorial on radio astronomy data analysis in school “First billion years” held at Indian Institute of Technology, Indore, January 2020.
- Taught “Radio Data Analysis and Observational Challenges in Radio Cosmology” in school “[Radio Cosmology and Continuum Observations in the SKA Era: A Synergic View](#)” held at International Centre for Theoretical Sciences, Bangalore from 14th-18th April, 2025. Youtube link for the lectures - [Lecture-1](#), [Lecture-2](#), [Lecture-3](#)

Collaboration Member

The Canadian Hydrogen Intensity Mapping Experiment (CHIME)

- Science lead for the first detection of the cosmological 21 cm auto-power spectrum at $z \sim 1$.
- Coordinated analysis, validation tests, and internal collaboration review.
- HI intensity mapping group
- Pipeline and infrastructure working group.

The Canadian Hydrogen Observatory and Radio-transient Detector (CHORD)

- Calibration and Intensity Mapping group
- HI galaxy survey group

Square Kilometre Array Observatory

- Member of Epoch-of-Reionization and Cosmic Dawn group.
- Member of Cosmology group.
- Member of SKA-India 21 cm cosmology group.
- Lead the “Akashganga” group within SKA-India to participate in the foreground data challenge of SKA.

Service

To the Astrophysics Community:

- Referee, Monthly Notices of the Royal Astronomical Society (MNRAS).
- Referee, Astronomy and Astrophysics (A&A).
- Referee, Open Journal of Astrophysics (OJA).
- Referee, Publications of the Astronomical Society of Australia (PASA.)
- Referee, GMRT time allocation committee (GTAC).

References

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| 1. Prof. Matt Dobbs | McGill University | matt.dobbs@mcgill.ca |
| 2. Prof. Gary Hinshaw | University of British Columbia | hinshaw@phas.ubc.ca |
| 3. Prof. Simon Foreman | Arizona State University | simon.foreman@asu.edu |
| 4. Prof. Nirupam Roy | IISc Bangalore | nroy@iisc.ac.in |
| 1. Prof. Abhirup Datta(PhD supervisor) | IIT Indore | abhirup.datta@iiti.ac.in |

Publications

Bibliometrics (as of August 2026): Total citations $\approx$ 603; h -index = 17; $i10$ -index = 21.

Lead Author (10) or *Student Advised (5)

1. [2026] Šoltinský T., **Chakraborty A. (Co-Led)**, Kulkarni G., Viel M., Trott C. M., Sagar R., Thyagarajan N., Bolton J. S., Ciardi B., Ryan-Weber E. V., Maitra S., Datta A., Roy N., *Forest without trees is still fruitful: constraints on the thermal state of the neutral IGM at $z \approx 5.6$ with the 21-cm forest power spectrum* (Submitted). [arXiv:2607.15341]
2. [2026] CHIME Collaboration (**Co-Led Chakraborty A.**), *Interpretation of 21 cm Auto Power Spectrum Measurement at $z \sim 1$ by the Canadian Hydrogen Intensity Mapping Experiment*, *The Astrophysical Journal* — **accepted, in press**. DOI: [10.48550/arXiv.2603.25680](https://doi.org/10.48550/arXiv.2603.25680); [arXiv:2603.25680]
3. [2025] CHIME Collaboration (**led by Chakraborty A.**), *Detection of the Cosmological 21 cm Signal in Auto-correlation at $z \sim 1$ with the Canadian Hydrogen Intensity Mapping Experiment*, *The Astrophysical Journal* — **accepted, in press**. DOI: [10.48550/arXiv.2511.19620](https://doi.org/10.48550/arXiv.2511.19620); [arXiv:2511.19620]
4. [2025] *Sagar R., Datta A., **Chakraborty A.**, Roy N., Sinha A., Mazumder A., Dutta P., Elahi Kh. Md. A., et al., *ELAIS-N1 deep field uGMRT Band-2: constraints on diffuse Galactic synchrotron emission power spectrum*, *MNRAS*, 544(4), 3617–3633. DOI: [10.1093/mnras/staf1922](https://doi.org/10.1093/mnras/staf1922)
5. [2023] **Chakraborty A.**, Roy N., *Detection of HI 21 cm emission from a strongly lensed galaxy at $z \sim 1.3$* , *MNRAS*, 519(3), 4074–4081. DOI: [10.1093/mnras/stac3696](https://doi.org/10.1093/mnras/stac3696)
6. [2022] *Mazumder A., **Chakraborty A.**, Datta A., *A study on the clustering properties of radio-selected sources in the Lockman Hole region at 325 MHz*, *MNRAS*, 517(3), 3407–3422. DOI: [10.1093/mnras/stac2801](https://doi.org/10.1093/mnras/stac2801)
7. [2022] *Mazumder A., Datta A., **Chakraborty A.**, Majumdar S., *Observing the reionization: effect of calibration and position errors on realistic observation conditions*, *MNRAS*, 515(3), 4020–4037. DOI: [10.1093/mnras/stac1994](https://doi.org/10.1093/mnras/stac1994)
8. [2022] *Sinha A., Basu A., Datta A., **Chakraborty A.**, *Deep uGMRT observations of the ELAIS-North 1 field: statistical properties of radio-infrared relations up to $z \sim 2$* , *MNRAS*, 514(3), 4343–4362. DOI: [10.1093/mnras/stac1504](https://doi.org/10.1093/mnras/stac1504)
9. [2022] **Chakraborty A.**, Datta A., Mazumder A., *A comparative analysis to deal with missing spectral information caused by RFI in cosmological HI 21 cm observations*, *The Astrophysical Journal*, 929(1), 104. DOI: [10.3847/1538-4357/ac5cc5](https://doi.org/10.3847/1538-4357/ac5cc5)
10. [2021] **Chakraborty A.**, Datta A., Roy N., Bharadwaj S., Choudhury T. R., Datta K. K., Pal S., Choudhury M., Choudhuri S., Dutta P., Sarkar D., *First multi-redshift limits on post-Epoch of Reionization 21 cm signal from $z = 1.96$ – 3.58 using uGMRT*, *The Astrophysical Journal Letters*, 907(1), L7. DOI: [10.3847/2041-8213/abd17a](https://doi.org/10.3847/2041-8213/abd17a)
11. [2020] *Mazumder A., **Chakraborty A.**, Datta A., Choudhuri S., Roy N., Wadadekar Y., Ishwara-Chandra C. H., *Characterizing EoR foregrounds: a study of the Lockman Hole region at 325 MHz*, *MNRAS*, 495(4), 4071–4084. DOI: [10.1093/mnras/staa1317](https://doi.org/10.1093/mnras/staa1317)
12. [2020] **Chakraborty A.**, Dutta P., Datta A., Roy N., *The study of the angular and spatial distribution of radio-selected AGNs and star-forming galaxies in the ELAIS N1 field*, *MNRAS*, 494(3), 3392–3404. DOI: [10.1093/mnras/staa945](https://doi.org/10.1093/mnras/staa945)
13. [2020] **Chakraborty A.**, Roy N., Wang Y., Datta A., Beuther H., Medina S.-N. X., Menten K. M., Urquhart J. S., Brunthaler A., Dzib S. A., *Characterization of unresolved and unclassified sources detected in radio continuum surveys of the Galactic plane*, *MNRAS*, 492(2), 2236–2240. DOI: [10.1093/mnras/stz3621](https://doi.org/10.1093/mnras/stz3621)
14. [2019] **Chakraborty A.**, Roy N., Datta A., Choudhuri S., Datta K. K., Dutta P., Bharadwaj S., Intema H., Choudhury M., Pal S., Choudhury T. R., *Detailed study of ELAIS N1 field with the uGMRT – II. Source properties and spectral variation of foreground power spectrum from 300–500 MHz observations*, *MNRAS*, 490(1), 243–259. DOI: [10.1093/mnras/stz2533](https://doi.org/10.1093/mnras/stz2533)
15. [2019] **Chakraborty A.**, Datta A., Choudhuri S., Roy N., Intema H., Choudhury M., Datta K. K., Pal S., Bharadwaj S., Dutta P., Choudhury T. R., *Detailed study of the ELAIS N1 field with the uGMRT – I. Characterizing the 325 MHz foreground for redshifted 21 cm observations*, *MNRAS*, 487(3), 4102–4113. DOI: [10.1093/mnras/stz1580](https://doi.org/10.1093/mnras/stz1580)

Other publications as contributing author

16. [2026] CHORD Collaboration (including **Chakraborty A.**), *Overview of the Canadian Hydrogen Observatory and Radio Transient Detector (CHORD) project*. [arXiv:2607.09374]
17. [2026] Bij A., Spekkens K., Hopkins H. S., Jones M. G., **Chakraborty A.**, Foreman S., Hill A. S., Lang D., Liu A., *CHORD HI-Galaxy Survey Forecasts: searching for nearby dark galaxies and high redshift giants*. [arXiv:2607.24903]
18. [2026] CHIME Collaboration (including **Chakraborty A.**), *The Squeezed Bispectrum from CHIME HI Emission and Planck Cosmic Microwave Background Lensing: Current Sensitivity and Forecasts*, *The Astrophysical Journal*, 1005(1), 73. DOI: [10.3847/1538-4357/ae77e6](https://doi.org/10.3847/1538-4357/ae77e6)
19. [2026] Rashid Md., Roy N., Dutta P., Pandian J. D., Vig S., Pal S., **Chakraborty A.**, Choudhuri S., *Detection of non-thermal radio emission components from the Orion Nebula: stellar jets, cloud collision, or feedback from stellar winds?*, *MNRAS*, 547(4). DOI: [10.1093/mnras/stag453](https://doi.org/10.1093/mnras/stag453)
20. [2026] Wang H., Phoompuang P., Masui K. W., **Chakraborty A.**, Foreman S., Höfer C., *Mitigating antenna gain errors with hybrid foreground residual subtraction in CHIME simulations*, *Physical Review D*, 113(4). DOI: [10.1103/1pp6-x3mb](https://doi.org/10.1103/1pp6-x3mb)
21. [2026] CHIME Collaboration (including **Chakraborty A.**), *Discovery of a 21 cm Absorption System at $z = 2.327$ with CHIME*, *The Astrophysical Journal*, 998(2), 310. DOI: [10.3847/1538-4357/ae3de7](https://doi.org/10.3847/1538-4357/ae3de7)

22. [2025] Tyndall W., Reda A., Shaw J. R., Bandura K., **Chakraborty A.**, et al., *Beam Maps of the Canadian Hydrogen Intensity Mapping Experiment (CHIME) Measured with a Drone*, *IEEE Open Journal of Antennas and Propagation*, 6(3), 928–940. DOI: [10.1109/OJAP.2025.3554457](https://doi.org/10.1109/OJAP.2025.3554457)
23. [2025] Wang H., Masui K., Bandura K., **Chakraborty A.**, Dobbs M., Foreman S., et al., *Demonstration of hybrid foreground removal on CHIME data*, *Physical Review D*, 111(10), 103531. DOI: [10.1103/PhysRevD.111.103531](https://doi.org/10.1103/PhysRevD.111.103531)
24. [2024] CHIME Collaboration (including **Chakraborty A.**), *Holographic Beam Measurements of the Canadian Hydrogen Intensity Mapping Experiment (CHIME)*, *The Astrophysical Journal*, 976(2), 163. DOI: [10.3847/1538-4357/ad8133](https://doi.org/10.3847/1538-4357/ad8133)
25. [2024] Gayen S., Sagar R., Mangla S., Dutta P., Roy N., **Chakraborty A.**, Kumar J., Datta A., Choudhuri S., *Calibration requirement for Epoch of Reionization 21-cm signal observation. Part III. Bias and variance in uGMRT ELAIS-N1 field power spectrum*, *JCAP*, 2024(05), 068. DOI: [10.1088/1475-7516/2024/05/068](https://doi.org/10.1088/1475-7516/2024/05/068)
26. [2024] Elahi Kh. Md. A., Bharadwaj S., Pal S., Ghosh A., Ali Sk. S., Choudhuri S., **Chakraborty A.**, Datta A., Roy N., Choudhury M., Dutta P., *Towards 21-cm intensity mapping at $z = 2.28$ with uGMRT using the tapered gridded estimator – IV. Wide-band analysis*, *MNRAS*, 529(4), 3372–3386. DOI: [10.1093/mnras/stae740](https://doi.org/10.1093/mnras/stae740)
27. [2024] CHIME Collaboration (including **Chakraborty A.**), *A Detection of Cosmological 21 cm Emission from CHIME in Cross-correlation with eBOSS Measurements of the Ly- α Forest*, *The Astrophysical Journal*, 963(1), 23. DOI: [10.3847/1538-4357/ad0f1d](https://doi.org/10.3847/1538-4357/ad0f1d)
28. [2023] Elahi Kh. Md. A., Bharadwaj S., Pal S., Ghosh A., Ali Sk. S., Choudhuri S., **Chakraborty A.**, Datta A., Roy N., Choudhury M., Dutta P., *Towards 21-cm intensity mapping at $z = 2.28$ with uGMRT using the tapered gridded estimator – III. Foreground removal*, *MNRAS*, 525(3), 3439–3454. DOI: [10.1093/mnras/stad2495](https://doi.org/10.1093/mnras/stad2495)
29. [2023] Elahi Kh. Md. A., Bharadwaj S., Ghosh A., Pal S., Ali Sk. S., Choudhuri S., **Chakraborty A.**, Datta A., Roy N., Choudhury M., Dutta P., *Towards 21-cm intensity mapping at $z = 2.28$ with uGMRT using the tapered gridded estimator – II. Cross-polarization power spectrum*, *MNRAS*, 520(2), 2094–2108. DOI: [10.1093/mnras/stad191](https://doi.org/10.1093/mnras/stad191)
30. [2023] Dzib S. A., Yang A. Y., Urquhart J. S., Medina S.-N. X., Brunthaler A., Menten K. M., (including **Chakraborty A.**) et al., *A global view on star formation: the GLOSTAR Galactic plane survey. VI. Radio Source Catalog II: $28^\circ < \ell < 36^\circ$ and $|b| < 1^\circ$, VLA B-configuration*, *Astronomy & Astrophysics*, 670, A9. DOI: [10.1051/0004-6361/202143019](https://doi.org/10.1051/0004-6361/202143019)
31. [2022] Pal S., Elahi Kh. Md. A., Bharadwaj S., Ali Sk. S., Choudhuri S., Ghosh A., **Chakraborty A.**, Datta A., Roy N., Choudhury M., Dutta P., *Towards 21-cm intensity mapping at $z = 2.28$ with uGMRT using the tapered gridded estimator – I. Foreground avoidance*, *MNRAS*, 516(2), 2851–2863. DOI: [10.1093/mnras/stac2419](https://doi.org/10.1093/mnras/stac2419)
32. [2022] Shaw A. K., Jagannath M., Mazumder A., **Chakraborty A.**, Patra N. N., Mondal R., Choudhuri S., *Detecting galaxies in a large HI spectral cube*, *Journal of Astrophysics and Astronomy*, 43(2), 99. DOI: [10.1007/s12036-022-09880-1](https://doi.org/10.1007/s12036-022-09880-1)
33. [2019] Choudhury M., Datta A., **Chakraborty A.**, *Extracting the 21 cm global signal using artificial neural networks*, *MNRAS*, 491(3), 4031–4044. DOI: [10.1093/mnras/stz3107](https://doi.org/10.1093/mnras/stz3107)

SKA data challenge - Led the SKA-India team Akashganga

34. [2025] Bonaldi A., Hartley P., Braun R., Purser S., (including **Chakraborty A.**) et al., *Square Kilometre Array Science Data Challenge 3a: foreground removal for an EoR experiment*, *MNRAS*, 543(2), 1092–1119. DOI: [10.1093/mnras/staf1466](https://doi.org/10.1093/mnras/staf1466)
35. [2023] Hartley P., Bonaldi A., Braun R., (including **Chakraborty A.**) et al., *SKA Science Data Challenge 2: analysis and results*, *MNRAS*, 523(2), 1967–1993. DOI: [10.1093/mnras/stad1375](https://doi.org/10.1093/mnras/stad1375)

Review articles in JOAA: Special Issue on “Indian Participation in the SKA”

36. [2023] Mazumder A., Datta A., Sathyanarayana Rao M., **Chakraborty A.**, Singh S., Tripathi A., Choudhuri M., *Synthetic observations with the Square Kilometre Array: development towards an end-to-end pipeline*, *Journal of Astrophysics and Astronomy*, 44(1) (Special Issue on “Indian Participation in the SKA”). DOI: [10.1007/s12036-022-09906-8](https://doi.org/10.1007/s12036-022-09906-8)
37. [2023] Shaw A. K., **Chakraborty A. (Co-Led)**, Kamran M., Ghara R., Choudhuri S., Ali Sk. S., Pal S., Ghosh A., Kumar J., Dutta P., Sarkar A. K., *Probing early Universe through redshifted 21-cm signal: modelling and observational challenges* (Review article), *Journal of Astrophysics and Astronomy*, 44(1) (Special Issue on “Indian Participation in the SKA”). DOI: [10.1007/s12036-022-09889-6](https://doi.org/10.1007/s12036-022-09889-6)

Review articles on SKAO science chapters

38. [2026] Bull P., Burba J., Ceccotti E., **Chakraborty A. (Co-Led)**, Choudhuri S., Datta A., et al., *Foreground characterization and mitigation in the observations of the CD/EoR with the SKA*. [[arXiv:2607.01048](https://arxiv.org/abs/2607.01048)]
39. [2026] CD Science Working Group (including **Chakraborty A.**), *Overview of 21 cm experiments at high redshift with SKAO*. [[arXiv:2606.26435](https://arxiv.org/abs/2606.26435)]
40. [2026] Elahi Kh. Md. A., Bharadwaj S., Bull P., Camera S., **Chakraborty A.**, Chang T.-C., Chen X., Choudhuri S., et al., *Observational frontiers in post-EoR 21-cm intensity mapping: lessons from the SKA pathfinders*. [[arXiv:2606.25049](https://arxiv.org/abs/2606.25049)]

Refereed conference proceedings papers

41. [2022] Reda A., Pinsonneault-Marotte T., Deng M., Amiri M., Bandura K., **Chakraborty A.**, et al., *Characterization of the John A. Galt telescope for radio holography with CHIME*, in *Millimeter, Submillimeter, and Far-Infrared Detectors and Instrumentation for Astronomy XI*, Proceedings of the SPIE, 12190, 121902V. DOI: [10.1117/12.2629429](https://doi.org/10.1117/12.2629429)

Contributed Talks

- DECEMBER 2017 “Characterizing Foregrounds in 21 cm Cosmology Observation with the uGMRT at 300-500 MHz”,
“Universe after the first 200 million years Cosmic Dawn, Reionization and Post reionization with 21cm”
held at Presidency University from 11-13 December, 2017
- DECEMBER 2018 “Detailed study of ELAIS N1 field using uGMRT observation at 300-500 MHz”,
Frontiers in 21 cm Cosmology” held at Kodaikanal Solar Observatory from 10-18th December, 2018
- JANUARY 2020 “Detail study of foregrounds in ELAIS N1 field”,
”First Billion Years” at Indian Institute of Technology, Indore, 2020
- MARCH 2021 “Characterizing Low-frequency Foregrounds for Cosmological HI studies with the uGMRT
- Indian SKA pathfinder” in AAS 236 virtual meeting held at USA
- JANUARY 2021 “First multi-redshift limits on HI 21 cm signal from $z = 1.96 - 3.58$ using uGMRT”
in SAZERAC SIP (on 29th Jan 2021) on the 21-cm Signal from Cosmic Dawn and the Epoch of Reionisation
- JUNE 2023 “Progress towards measuring HI auto power spectrum using CHIME data”
in TomFest: Frontiers in Radio Science and Engineering with Tom Landecker, at DRAO.
- MARCH 2024 “Progress towards measuring HI auto power spectrum using CHIME data”
in Cosmology in the Alps conference, Switzerland.
- JUNE 2025 “Progress towards measuring HI auto power spectrum using CHIME data”
in Line Intensity Mapping, 2025, Annecy, France.
- DECEMBER 2025 “Detection of the Cosmological 21 cm Auto Power Spectrum with CHIME at $z > 1$ ”
in Science at Low Frequency Conference (SALF), Orleans, France.
- AUGUST 2026 “Detection of the Cosmological 21 cm Auto Power Spectrum with CHIME at $z > 1$ ”
in the Line Intensity Mapping conference at Caltech.

Invited Talks

- APRIL 2025 “Mapping the large-scale structure of the Universe with CHIME and CHORD”
Seminar at Raman Research Institute, Bengaluru.
- APRIL 2025 “Progress towards measuring HI auto power spectrum using CHIME data”
in [Radio Cosmology and Continuum Observations in the SKA Era: A Synergic View](#)
at the International Institute for Theoretical Sciences, Bengaluru.
- JANUARY 2026 “Detection of the Cosmological 21 cm Auto Power Spectrum with CHIME at $z > 1$ ”
Seminar at Indian Institute of Technology, Kharagpur (IIT-KGP).
- FEBRUARY 2026 “Detection of the Cosmological 21 cm Auto Power Spectrum with CHIME at $z > 1$ ”
State of the Universe Seminar (SOTU) at Tata Institute of Fundamental Research (TIFR).
- JANUARY 2026 “Detection of the Cosmological 21 cm Auto Power Spectrum with CHIME at $z > 1$ ”
Astrophysics Seminar at Raman Research Institute (RRI).