



## **Workshop on 21-cm Cosmology**

**December 9-13, 2024**

Centre for Strings, Gravitation and Cosmology, Department of Physics,  
Indian Institute of Technology Madras, Chennai

### **Scientific Organizing Committee**

Somnath Bharadwaj, Tirthankar Roy Choudhury, Abhirup Datta, Kanan K. Datta, Tuhin Ghosh,  
Rajesh Mondal, Janakee Raste, Nirupam Roy, L. Sriramkumar

### **Local Organizing Committee**

Sri Aravind, Samir Choudhuri, Asif Elahi, Raghuv eer Garani, Alipriyo Hoory, Shouvik Sarkar

## Monday, December 9

Time	Speaker	Title
09:15-09:30	Introductory remarks	
09:30-10:15	Tirthankar Roy Choudhury	SKA-related science activities in India and future prospects
10:15-11:00	Nishikanta Khandai	21-cm Cosmology in the Post Reionization era
11:00-11:30	Coffee break	
11:30-11:50	Anindita Nandi	The correlations between galaxy properties in different environments of the cosmic web
11:50-12:10	Saikat Gayen	Recovering redshifted 21-cm power spectrum : residual gain effects in radio interferometric Observations.
12:10-12:30	Samit Kumar Pal	Analysing the effect of calibration errors and instrumental noise on HI 21-cm maps from the EoR using the LCS
12:30-14:00	Lunch break	
14:00-14:30	Abinash Kumar Shaw	Inferring IGM properties during EoR using 21-cm Powerspectra
14:30-15:00	Janakee Raste	Thermal Evolution of the IGM with Lyman- $\alpha$ photons during Cosmic Dawn
15:00-15:30	Suvedha Suresh Naik	Signatures of Primordial Features in the High-redshift 21 cm Signal
15:30-16:00	Coffee break	
16:00-17:00	Coordinator	Poster Session



## Tuesday, December 10


Time	Speaker	Title
09:30-10:15	Raghunath Ghara	Cosmic Dawn, Epoch of Reionization: Theory and Simulation
10:15-11:00	Barun Maity	Reionization using FRBs
11:00-11:30	Coffee break	
11:30-11:50	Anirban Chakraborty	Modeling star-forming galaxies in the Epoch of Reionization
11:50-12:10	Suman Pramanick	The Evolving Power Spectrum for the lightcone epoch of reionization 21-cm signal
12:10-12:30	Minal Chhabra	Estimation of HI Bias & Model parameters in Post-EoR universe
12:30-14:00	Lunch break	
14:00-14:30	Kanan Kumar Datta	Activities of the SKA India EoR&Cosmology SWG
14:30-15:00	Madhurima Choudhury	Deciphering the IGM from 21-cm power spectrum measurements
15:00-15:30	Ankita Bera	Reconciling early massive galaxies with cosmic reionization constraints
15:30-16:00	Coffee break	
16:00-17:00		Summary and Discussion





## Wednesday, December 11

Time	Speaker	Title
09:30-10:15	Asif Elahi	21-cm Intensity Mapping using the uGMRT
10:15-11:00	Supratik Pal	Signatures of beyond vanilla Cosmology in 21-cm observations
11:00-11:30	Coffee break	
11:30-11:50	Antara Dey	"Exploring Reionization astrophysical parameters using Gaussian Process Regression "
11:50-12:10	Debarun Paul	Impacts of Z3 symmetric dark matter models on global 21-cm signal
12:10-12:30	Shouvik Sarkar	Measuring the DGSE using the Murchison Widefield Array (MWA)
12:30-14:00	Lunch break	
14:00-14:30	Suman Sarkar	Impact of Large-Scale Structure Formation on the Global Information Budget the Global Information Budget
14:30-15:00	L. Sriramkumar	Observing nulls in the primordial correlations through the HI 21 cm signal
15:00-15:30	Prasun Dutta	Effect of calibration error in high dynamic range radio interferometric observations
15:30-16:00	Coffee break	
16:00-17:00	Coordinator	Summary and Discussion





## Thursday, December 12

Time	Speaker	Title
09:30-10:15	Girish Kulkarni	21cm forest and multi-wavelength observations of the early phase of our Universe
10:15-11:00	Prakash Gaikwad	Reionization using quasar spectra
11:00-11:30	Coffee break	
11:30-11:50	Chandra Shekhar Murmu	Forecasting the CO-21cm cross-correlation signal from the EoR using line-intensity mapping surveys
11:50-12:10	Deepthi Moorkanat	21-cm Cosmology: Unveiling the Dark Ages
12:10-12:30	Arnab Mishra	Detecting ionized bubbles around luminous sources during the reionization era using HI 21-cm signal
12:30-14:00	Lunch break	
14:00-14:30	Atrideb Chatterjee	Non-parametric reconstruction of photon escape fraction from reionization
14:30-15:00	Rashmi Sagar	Constraints on the 21-cm signal from the EoR: uGMRT Band-2 observations of ELAIS-N1 field
15:00-15:30	Muskan Khan	A Dynamical System Analysis in Cosmology
15:30-16:00	Coffee break	
16:00-17:00	Coordinator	21-cm cosmology: scope and prospects Chandrasekhar Lectures by Prof. Shiv Sethi





## Friday, December 13

Time	Speaker	Title
09:30-10:15	T Prabhu	overview of the SKA telescope
10:15-11:00	Saurabh Singh	Global signal and SARAS
11:00-11:30	Coffee break	
11:30-11:50	Narendra S	Global Signal Detection using Interferometers
11:50-12:50		Summary and Discussion
12:50-13:00		Vote of Thanks
13:00-14:00	Lunch break	

