

SKA CD-EoR Science Team Meeting 2024

Agenda

Venue: Room E225, Physics Building, Tsinghua University, Beijing, China.

(Google maps coordinates 40°00'29.0"N 116°19'19.5"E;

高德地图 search for “清华大学物理楼（建设中）”)

Online access will be made through the *VooV Meeting* (for international connection) and 腾讯会议 (for Chinese). Please download VooV here: <https://voovmeeting.com/>. Meeting codes will be sent by email to the registered online participants.

15min talks = 12min + 3min

5min talks = 4min + 1min

The listed time is local (Beijing) times (UT+8).

===== Day 1 (Wed July 17, 2024) =====

9:00 – 9:30 Welcome and updates

Welcome & brief logistics (10 min) - Yi Mao (Tsinghua U.)

SKA status update (20 min) - Cathryn Trott (Curtin/SKAO-online)

Session 1: Theory of CD/EoR. Chair: Yi Mao

9:30 – 9:45 Andrei Mesinger (In person), “Status and future of 21-cm cosmology during the first billion years”

9:45 – 10:00 Kyungjin Ahn (In person), “A Science Case for the Full-sky Probe of the 21-cm Background: Dipole and Integrated Sachs-Wolfe Effect as a Global 21-cm Measurement”

10:00 – 10:15 Bohdan Novosyadlyj (Online), “The redshifted 21-cm hydrogen line from Dark Ages and Cosmic Dawn: dependences on dark matter nature and first light”

10:15 – 10:30 Yao Zhang (In person), “Unveiling the dark matter nature with reionization relics”

Group Photo & Coffee Break

Session 2: Theory of CD/EoR (cont.). Chair: Andrei Mesinger

11:00 – 11:15 Bin Yue (In person), “The velocity acoustic oscillations on the 21 cm signal from the Cosmic Dawn”

11:15 – 11:30 Qingbo Ma (In person), “Stellar population synthesis models and cosmic reionization”

11:30 – 11:45 Di Wu (In person), “Gravitational lensing effects on ionized structures in the Epoch of Reionization”

11:45 – 12:00 Leon Noble (Online), “Impact of the sources of Epoch of Reionization on the 21-cm bispectrum”

Lunch break (buffet provided)

Session 3: Foreground models, Probes beyond 21 cm. Chair: Yidong Xu

14:00 – 14:15 Yanping Cong (In person), “An updated Ultra-long wavelength sky model with absorption effect”

14:15 – 14:30 Shijiao Yin (In person), “Refining the Ideal Sky Model for CD/EoR Detection”

14:30 – 14:45 Samuel Gagnon Hartman (Online), “Understanding the epoch of reionization with galaxy - SKA 21cm cross correlation”

14:45 – 15:00 Ivelin Georgiev (Recorded), “Constraining cosmic reionisation by combining the kinetic Sunyaev-Zel'dovich effect and the 21 cm signal”

15:00 – 15:15 James Davies (Online), “Multi-Wavelength Forward Modelling of the Epoch of Reionisation and Cosmic Dawn with Stochastic Halo Populations”

Coffee Break

Session 4: Observational updates & Instrumental effects. Chair: Raul A. Monsalve

15:45 – 16:00 Florent Mertens (Online), “Recent Advances in the LOFAR-EoR and NenuFAR Cosmic Dawn Projects”

16:00 – 16:15 Rashmi Sagar (Online), “Eavesdropping on the Epoch of Reionization: uGMRT Band-2 insights with ELAIS-N1 deep field”

16:15 – 16:30 Samit Kumar Pal (Online), “Analysing the effect of calibration errors and instrumental noise on HI 21-cm maps from the EoR using the LCS”

16:30 – 16:45 Aman Chokshi (Online), “The Necessity of Individually Validated Beam Models for an Interferometric Epoch of Reionization Detection”

16:45 – 17:00 Chenxi Shan (In person), “An evaluation of source-blending impact on the calibration of SKA EoR experiments”

Lightening talks. Chair: Raul A. Monsalve

17:05 – 17:10 Siyi Zhao (In person), “Constrain Primordial non-Gaussianity with the 21 cm Bispectrum from the Epoch of Reionization”

17:10 – 17:15 Chandra Shekhar Murmu (Online), “Impact of astrophysical scatter on the [H I] 21cm bispectrum”

17:15 – 17:20 Hemanth Potluri (Online), “Assessing the impact of lightcone effect on EoR 21-cm signal using percolation analysis”

17:20 – 17:25 Teppei Minoda (In person), “Effects on the reionization history from the primordial perturbations”

19:00 Conference Dinner at HUA'S RESTAURANT (Qing Hua Xi Road)

===== Day 2 (Thu July 18, 2024) =====

Morning: Outdoor free discussion

Session 5: Interpretation & Inference techniques. Chair: Kyungjin Ahn

15:00 – 15:15 Junsong Cang (In person), “Bayesian evidence analysis for EDGES sky data with Pop III radio galaxies”

15:15 – 15:30 Sambit Giri (Online), “Improvements in the exploration of the cosmic dawn in the era of artificial intelligence”

15:30 – 15:45 Ian Hothi (Online), “Applications of Wavelet Statistics to EoR Studies”

15:45 – 16:00 Anshuman Acharya (Online), “New tools and simulations for detecting the Reionization Era Neutral Hydrogen 21-cm Signal”

Coffee Break

Session 6: Inference techniques (cont.). Chair: Bin Yue

16:30 – 16:45 Caroline Heneka (Online), “Fast, robust and optimal inference for 21cm cosmology with the SKA”

16:45 – 17:00 Thomas Binnie (In person), “Statistical summaries for Bayesian analysis in EoR Science”

17:00 – 17:15 Sabrina Berger (Online), “Map based density field and parameter inference during reionization with the SKA”

17:15 – 17:30 Daniela Breitman (Online), “A complete machine-learning-based pipeline for Bayesian inference with 21-cm Power Spectra”

Lightening talks. Chair: Bin Yue

17:35 – 17:40 Sanjay Kumar Yadav (Online), “Constraining the EoR using the 21-cm signal power spectrum through BNNs and Bayesian inference”

17:40 – 17:45 Anirban Chakraborty (Online), “Modelling the properties of star-forming galaxies at high redshifts”

17:45 – 17:50 Tong Su (In person), “AGN SED Modeling: Exploring the Influence of Active Galactic Nuclei on the Reionization in the Early Universe”

18:30 Light Dinner (buffet provided)

===== Day 3 (Fri July 19, 2024) =====

Session 7: Foreground effects & removal. Chair: Qingbo Ma

9:30 – 9:45 Le Zhang (In person), “21 cm signal recovery in SKA Data Challenge 3”

9:45 – 10:00 Jiajun Zhang (In person), “ForkEoR: a new machine learning based cleaning and foreground removal method for CD/EoR imaging”

10:00 – 10:15 Zhenghao Zhu (In person), “A point source catalogue update for SKA1-low simulation and Signal Separation Approach for the EoR signal”

Coffee Break

Session 8: Observational strategies & Signal extraction. Chair: Hayato Shimabukuro

10:45 – 11:00 Yuan Shi (In person), “Influence of angular resolution on 21 cm forest observations”

11:00 – 11:15 Anshuman Tripathi (In person), “Extracting the HI 21 cm signal from the ground-based observation using Artificial Neural Networks”

11:15 – 11:30 Tianyang Liu (In person), “Detecting Cosmic 21 cm global signal using an improved polynomial fitting algorithm”

11:30 – 11:45 Mengfan He (In person), “Influence of sources with a spectral peak in the detection of Cosmic Dawn and Epoch of Reionization”

Lunch break (buffet provided)

Session 9: EoR-SDC discussions

14:00 – 15:00 SDC3a discussion led by Le Zhang

15:00 – 16:00 SDC3b discussion led by Andrei Mesinger

Coffee Break

Session 10: EoR-commissioning discussion & Summary

16:30 – 17:30 Commissioning discussion led by Abhirup Datta (Online)

17:30 – 17:40 Summary by Yi Mao