LIM25 - Annecy



ID de Contribution: 91

Type: Non spécifié

21-cm x Galaxies during the Epoch of Reionization: Prospect for Detection with Current and Future Radio and Optical Surveys

jeudi 5 juin 2025 10:40 (15 minutes)

Over the past decade, large radio experiments have set ever more stringent upper limits on the 21-cm power spectrum during the Epoch of Reionization. With increased sensitivity from current and planned future surveys, we are moving fast towards detecting the 21-cm auto power spectrum. However, with the complexities of systematic effects in low-frequency instruments, validating a potential detection remains a foremost challenge. Cross-correlation between 21-cm and other biased tracers at the same redshift provides an excellent method for such a validation while introducing additional cosmological and astrophysical constraints. In this talk, I will discuss our recent efforts to create foreground-filtered 21-cm image cubes around bright Ly-alpha emitters with the Hydrogen Epoch of Reionization Array. Stacking these 21-cm image cubes provides one of the quickest ways to detect a cross-correlation signal. I will discuss forecasts from applying our imaging pipeline on mock observations obtained from the THESAN radiation-magneto-hydrodynamic simulations. Our results are an important step towards combining 21-cm experiments with current and future high-redshift galaxy surveys such as the Lyman Alpha Galaxies in the Epoch of Reionization survey, the Reionization EXplorer, and the Nancy Grace Roman Space Telescope.

Author: CHEN, Kai-Feng (Massachusetts Institute of Technology)
Co-auteur: Prof. HEWITT, Jacqueline (Massachusetts Institute of Technology)
Orateur: CHEN, Kai-Feng (Massachusetts Institute of Technology)
Classification de Session: Conntributed Talks 12: LIM and EoR