ID de Contribution: **52** Type: **Non spécifié**

Detection of the power spectrum turnover with SKA & some galaxy surveys

jeudi 12 juin 2025 12:10 (20 minutes)

Understanding the universe at ultra-large scales offers a unique window into its origins and evolution, particularly the transition from radiation to matter domination. The power spectrum turnover, a subtle yet critical feature of large-scale structure, holds the key to unraveling these mysteries. In this study, we explore the potential of next-generation surveys, including the Square Kilometre Array (SKA) and the Dark Energy Spectroscopic Instrument (DESI), to detect and constrain this elusive signature. By combining 21cm intensity mapping and galaxy surveys, we employ advanced methodologies such as Fisher forecasts and Markov Chain Monte Carlo techniques to analyze this cosmological feature. Our results highlight the exceptional capabilities of SKA-MID Band 1, which emerges as the most promising instrument for achieving high detection significance and robust parameter constraints. We also address key challenges, including foreground contamination and telescope beam effects, and propose strategies to mitigate their impact. This work not only demonstrates the feasibility of detecting the turnover but also lays the groundwork for future studies probing ultra-large scales, offering new insights into the universe's large-scale structure and its governing physical laws.

Orateur: DUBE, Yolanda (University of the Western Cape)

Classification de Session: COLOURS Workshop