



ID de Contribution: 39

Type: Non spécifié

Early Universe with CMB B-mode: observational challenges

mercredi 29 mars 2023 12:35 (15 minutes)

The large-scale B -mode polarisation of the Cosmic Microwave Background (CMB) represents one of the most powerful sources of information about the high-energy physics taking place in the early Universe. If detected, the most likely explanation for this signature would be the emission of primordial gravitational waves after the Big Bang, which would carry valuable information about the physics that gave rise to it. Detecting this signature is challenging, however, due to the presence of B -mode-emitting Galactic foregrounds and the exquisite precision with which different instrumental systematics must be kept under control in order to tease out this faint signal. In this talk, I will briefly generally describe how these challenges affect our observations within the context of current and forthcoming CMB experiments. In particular, I will present novel methods for the removal of foregrounds and the characterisation of the impact of a variety of instrumental effects on the final cosmological signal.

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Classification de Session: Dark and Primordial Universe & Gravitational Waves

Classification de thématique: Dark Universe