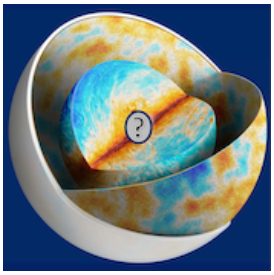

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A Unified Framework for Mitigating Foregrounds and Systematic Effects for Tensor-to-Scalar Ratio and Birefringence Angle Measurements

lundi 4 décembre 2023 12:10 (20 minutes)

Precise measurements of the faint primordial B-modes originating from cosmological inflation (parameterized by r), or from EB correlations coming from parity-violating mechanisms in the Universe (parameterized by the isotropic cosmic birefringence angle, β), require meticulous attention to the removal of Galactic foregrounds and the mitigation of systematic effects, as well as the interplay between the two.
In Jost et al. 2023 (PRD), we address this interplay by developing a map-based parametric component separation approach that considers polarization angle miscalibration and incorporates calibration priors. This framework propagates statistical and systematic errors from spectral and instrumental parameters to estimate r and β. In this talk I will show new applications of this approach. First, its utility in ground-based experiments for polarization angle calibration requirements and E-to-B leakage mitigation in the search for r. Secondly, this framework is used as one of the forecasting pipelines assessing LiteBIRD's capabilities in measuring β under varying levels of foregrounds and systematic complexity. I will provide a brief overview of the other methodologies employed in this study and explain how this framework complements the diverse approaches utilized.

Auteur principal: JOST, Baptiste (IPMU)

Orateur: JOST, Baptiste (IPMU)

Classification de Session: Contributions