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Cosmological Parameter Forecasts for a CMB-HD Survey

Thursday 16 May 2024 14:15 (15 minutes)

In this talk I will present forecasts on cosmological parameters for a CMB-HD survey. These forecasts include residual foregrounds, delensing of the acoustic peaks, and DESI BAO. We find that CMB-HD can improve constraints on the scalar spectral index, n_s , by a factor of two compared to precursor surveys. We also find that the CMB-HD constraint on N_{eff} can rule out light thermal particles back to the end of inflation with 95% confidence. As an application, this can rule out the QCD axion in a model-independent way assuming the Universe's reheating temperature was high enough that the axion thermalized. We also find that baryonic effects can bias parameters if not marginalized over, and can increase parameter error bars. However, this can be mitigated by including information about baryonic effects from kinetic and thermal Sunyaev-Zel'dovich measurements by CMB-HD. I will also discuss details of the publicly available CMB-HD likelihood and fisher estimation codes.

Mini Symposia (Invited Talks Only)

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