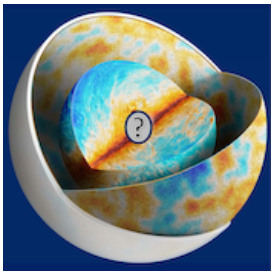

ID de Contribution: **2** Type: **Non spécifié**

Single frequency CMB B-mode inference with realistic foregrounds from a single training image

mardi 16 novembre 2021 10:00 (20 minutes)

With a single training image and using wavelet phase harmonic augmentation, we present polarized Cosmic Microwave Back- ground (CMB) foreground marginalization in a high-dimensional likelihood-free (Bayesian) framework. We demonstrate robust foreground removal using only a single frequency of simulated data for a BICEP-like sky patch. Using Moment Networks we estimate the pixel-level posterior probability for the underlying {⊠, ⊠} signal and validate the statistical model with a quantile- type test using the estimated marginal posterior moments. The Moment Networks use a hierarchy of U-Net convolutional neural networks. This work validates such an approach in the most difficult limiting case: pixel-level, noise-free, highly non-Gaussian dust foregrounds with a single training image at a single frequency. For a real CMB experiment, a small number of representative sky patches would provide the training data required for full cosmological inference. These results enable robust likelihood-free, simulation-based parameter and model inference for primordial B-mode detection using observed CMB polarization data.

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Classification de Session: Contributions