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New Constraints on Primordial Gravitational Waves using Planck, WMAP, and BICEP/Keck Observations through the 2018 Observing Season

mardi 16 novembre 2021 14:00 (1 heure)

The BICEP/*Keck* series of experiments targets the polarisation of the Cosmic Microwave Background at degreescale resolution from the South Pole. In our most recent release, we present results from an analysis of all data taken by the BICEP2, *Keck* Array and BICEP3 CMB polarisation experiments up to and including the 2018 observing season. The Q/U maps now reach depths of 2.8, 2.8 and 8.8 µKcmb arcmin at 95, 150 and 220 GHz respectively, over an effective area of \approx 600 square degrees at 95 GHz and \approx 400 square degrees at 150 & 220 GHz. Adding publicly available maps of *Planck* and WMAP at frequencies from 23 to 353 GHz, our likelihood analysis yields the constraint r_{0.05} < 0.036 at 95% confidence. Running maximum likelihood search on simulations we obtain unbiased results and find that $\sigma(\mathbf{r}) = 0.009$.

In this talk, I will give an overview of the current state and upcoming upgrades of the BICEP/Keck program, and detail our analysis pipeline from map and power spectra to constraints on cosmological parameters. I will also address how we validate our analysis choices and tackle systematic effects.

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