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Predictions for the CMB in inflationary and anisotropic cosmologies

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The paradigm of slow-roll inflation provides a snapshot of the early universe that is in good agreement with present observations. Despite its success, most of the models studied so far rely heavily on the assumption that the universe is perfectly isotropic at early times. In this talk, I will discuss recent advances in anisotropic inflationary models. We adopt a Fock quantization for gauge-invariant perturbations. We evolve them through an anisotropic bounce within loop quantum cosmology. Despite anisotropies die out very rapidly just before the inflationary expansion, scalar and tensor perturbations keep memory of that anisotropic phase, and leave several types of anomalies in the Cosmic Microwave Background (CMB). With these imprints and current data, we constrain the departure from spatial isotropy of the early universe, as well as discuss modifications in the usual angular correlation functions and the generation of TB and EB correlations that are forbidden in the standard isotropic scenario.

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