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Viability of loop quantum cosmology at the level of bispectrum

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Observations by Planck indicate that CMB anisotropies are consistent with predictions of nearly Gaussian primordial perturbations as the one generated in slow roll inflation. On the other hand, loop quantum cosmology (LQC) generates a non-Gaussian bispectrum. In particular, calculations of primordial bispectrum generated in LQC shows that the non-Gaussianity function $f_{\mathrm{NL}}(k_1,\ k_2,\ k_3)$ is highly scale dependent and oscillatory at long wavelengths and is nearly scale invariant as in slow roll at small scales. In this talk, we discuss the viability of such a non-Gaussian bispectrum in the light of observations by Planck. More specifically, we model the bispectrum generated in LQC and compute its imprints on the CMB bispectrum. We then show that the CMB bispectrum generated in LQC though non-Gaussian, due to its highly oscillatory nature, is similar to that generated in slow roll inflation and hence consistent with the observations by Planck.

Primary authors: K, Roshna (National Institute of Technology Karnataka, Surathkal, India); SREENATH, V (National Institute of Technology Karnataka)

Presenter: K, Roshna (National Institute of Technology Karnataka, Surathkal, India)

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