

Theory: Primordial fluctuations from quantum gravity

Monday, September 4, 2023 4:15 PM (15 minutes)

In modern cosmology there is an agreement that the seeds of structure formations reside in the quantum fluctuation of the geometry in the early universe, but there is no agreement about how these could be derived from a quantum theory of gravity. In this talk I present a proposal based on the covariant formulation of Loop Quantum Gravity. I describe how to define a wavefunction of the universe in this context, and a how we can study fluctuations and correlations between spacial regions. The results obtained so far has been made possible by recent progress in numerical computations. I discuss the current state of this research program and the possible implications for modeling the early universe.

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