

- **Perturbations in Loop Quantum Cosmology**
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In loop quantum cosmology, the quantization procedure of loop quantum gravity is used in order to study the role of quantum gravity effects in cosmological models when the space-time curvature nears the Planck scale. After a brief review of the loop quantum cosmology of the simplest homogeneous space-times, I will explain how linear perturbations can be studied by working on a lattice. In this setting, it is possible to determine the loop quantum cosmology corrections to the Mukhanov-Sasaki equation that governs the dynamics of perturbations in cosmology. I will end by showing how these equations can be used in the matter bounce scenario to evolve the perturbations through the bounce, and explain how the power spectra of the resulting scalar and tensor perturbations are (i) modified by quantum gravity effects, and (ii) compatible with the latest data from the Planck satellite.