Contribution ID: **37** Type: **not specified**

Quantum-gravitational corrections to the power spectrum for a closed universe

Thursday, 15 June 2023 16:00 (15 minutes)

We study the quantum-gravitational corrections to the power spectrum of a gauge-invariant inflationary scalar perturbations in a closed model of a universe. We consider canonical quantum gravity as an approach to quantizing gravity. This leads to the Wheeler-DeWitt equation, which has been studied by applying a semiclassical Born–Oppenheimer type of approximation. At the corresponding orders of approximation, we recover both the uncorrected and quantum-gravitationally corrected Schrödinger equations for the perturbation modes from which we calculate the quantum-gravitational corrections to the power spectrum in the slow-roll regime. The results are compared to the power spectra for the flat model of the universe.

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Session Classification: Thursday afternoon session