

# Inflationary and pre-inflationary scalar perturbations on closed universes in loop quantum cosmology

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We analyze the evolution of scalar cosmological perturbations in a closed universe on a background described by a loop quantum cosmology model with an inflationary regime consistent with the constraints on inflation set by the observations of the CMB by the Planck mission. Initial conditions for the perturbations are set before the bounce, and the perturbations are numerically evolved until the end of the inflationary regime, allowing the determination of the primordial power spectrum for the scalar perturbations. The power spectrum includes corrections due to quantum effects in the background evolution and to the presence of spatial curvature. Such corrections can become relevant for the largest observable modes of the CMB even for spatial curvatures much smaller than the observational bound obtained without considering the pre-inflationary evolution of the perturbations.

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