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Initial conditions of pre-inflation in LQC

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We discuss the preinflationary dynamics of the spatially flat FLRW universe filled with a single scalar field that has the generic potentials, in the framework of loop quantum cosmology. The evolution can be divided into two different classes, one is dominated initially (at the quantum bounce) by the kinetic energy of the scalar field, and one is not. In both cases, we identify numerically the physically viable initial conditions that lead to not only a slow-roll inflationary phase, but also enough e-folds to be consistent with observations, and find that the output of such a viable slow-roll inflationary phase is generic. In addition, we also show that in the case when the evolution of the universe is dominated initially by the kinetic energy of the scalar field, the evolution before reheating is always divided into three different phases: bouncing, transition and slow-roll inflation.

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