Title:	Circuit complexity from cosmological islands.
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Abstract:	Recently, in various theoretical works, path-breaking progress has been made in recovering the well-known page curve of an evaporating black hole with quantum extremal islands, proposed to solve the long-standing black hole information loss problem related to the unitarity issue. Motivated by this concept, in this paper, we study cosmological circuit complexity in the presence (or absence) of quantum extremal islands in negative (or positive) cosmological constant with radiation in the background of Friedmann-Lemaî tre-Robertson-Walker (FLRW) space-time, i.e., the presence and absence of islands in anti de Sitter and the de Sitter space-time having SO(2, 3) and SO(1, 4) isometries, respectively. Without using any explicit details of any gravity model, we study the behavior of the circuit complexity function with respect to the dynamical cosmological solution for the scale factors for the above mentioned two situations in FLRW space-time using squeezed state formalism. By studying the cosmological circuit complexity, out-of-time ordered correlators, and entanglement entropy of the modes of the squeezed state, in different parameter space, we conclude the non-universality of these measures. Their remarkably different features in the different parameter space suggests their dependence on the parameters of the model under consideration.
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