

Quantum Signatures and Decoherence during Inflation

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In order to shed light on the quantum to classical transition of the primordial perturbations during inflation, we investigated the decoherence of a system of scalar curvature perturbations induced by an unobservable environment of deep subhorizon tensorial modes. We computed the associated corrections to the cosmological correlation functions, looking for distinguishable signatures which could, in future observations, prove the quantum origin of primordial perturbations. In doing this, we commented on proposed techniques to deal with non-Markovianity (i.e. memory effects in the environment, which drastically complicates calculations), which seems to be ubiquitous in an inflationary framework.

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