

Title: “Initial Conditions for Cosmic Inflation from a non-singular bounce”

Abstract:

I will construct an effective theory of gravity which contains infinitely many covariant derivatives which can ameliorate the problem of ghost instability at the perturbative level. I will demonstrate how infinite derivative gravity can smoothen the initial inhomogeneities and anisotropies in a time dependent background and gives rise to a stable non-singular bouncing cosmology, which is both homogeneous and isotropic. After exiting the bounce the Universe becomes sufficiently homogeneous on large scales to ensue cosmic inflation which satisfies all the criteria for a sub-Planckian inflation.