The Holographic Universe

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We present a holographic description of four-dimensional single-scalar inflationary universes in terms of a three-dimensional quantum field theory. The holographic description correctly reproduces standard inflationary predictions in their regime of applicability. In the opposite case, wherein gravity is strongly coupled at early times, we propose a holographic description in terms of perturbative QFT and present models capable of satisfying the current observational constraints while exhibiting a phenomenology distinct from standard inflation. This provides a qualitatively new method for generating a nearly scale-invariant spectrum of primordial cosmological perturbations.

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