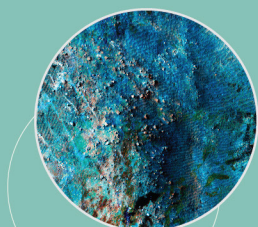
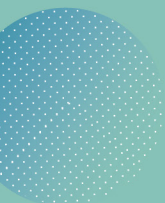




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Tunnelling out of Starobinsky inflation: Raising the spectral tilt

by Jose. A. R. Cembranos, Jesús Luque and Javier Rubio

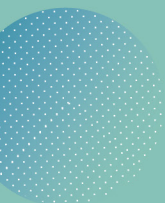
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Abstract

We propose a hybrid realization of Starobinsky inflation in which the inflationary epoch ends through vacuum decay. The model consists of an effective two-field system with a metastable Starobinsky branch shifted with respect to the true one. During the observable stage, the inflaton slow-rolls along the false branch, until a first-order phase transition in an orthogonal direction connects it to the true branch and ends inflation abruptly. This old-inflation-like exit skips the last part of the would-be Starobinsky trajectory. As a result, the Cosmic Microwave Background pivot scale exits the Hubble radius further from the minimum of the false branch than in ordinary Starobinsky inflation, raising the scalar spectral tilt n_s while preserving the characteristic small tensor-to-scalar ratio. This provides a simple way of moving Starobinsky inflation towards the high- n_s region favoured by recent ACT-related combinations. The same vacuum transition leaves a stochastic gravitational-wave relic whose peak frequency is controlled by the tunnelling timescale and the subsequent reheating history.

