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Inflation without an inflaton

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The inflationary paradigm successfully explains the observed large-scale homogeneity and isotropy of the Universe, while also providing a mechanism for generating the seeds necessary for the formation of cosmic structures. In the simplest models, the nearly scale-invariant and almost Gaussian primordial perturbations arise from the amplification of quantum vacuum fluctuations of the scalar inflaton field, whose microphysical origin and the structure of its potential remain unknown.
Motivated by the search for a model-independent description of inflationary dynamics, I will discuss a novel scenario in which inflation is produced without relying on a scalar field. In the 'inflation without inflaton' framework, the inflationary expansion is driven by a de Sitter background and scalar fluctuations arise as second-order effects from tensor metric perturbations (i.e. gravitational waves).
I will outline the theoretical framework, present the prediction for the scalar power spectrum and discuss the new advances in the study of its intrinsic primordial non-Gaussianity.

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