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Baryogenesis and Preheating in Starobinsky-Higgs Inflation

Cosmological inflation is nowadays a well established paradigm to solve the classical problems of the standard model of Cosmology and to generate the primordial density perturbations giving rise to the present Universe structure. The achievements of inflation usually require the presence of one or several scalar field, the inflaton, giving rise to physics beyond the Standard Model (SM) of particle physics. Starobinsky-Higgs inflation currently stands out as one of the best-fit models of Planck data.
Using a doubly-covariant formalism for the inflationary dynamics and the production of helical gauge fields, I will show how to derive the relevant dynamics of preheating and how the observed baryon asymmetry of the Universe can be obtained when this model is supplemented by a dimension-six CP-violating term in the hypercharge sector.
The results include the full SM SU(2)×U(1) gauge dynamics in a complete analysis of the perturbations at the linear order.

Secondary track

T09 - Beyond the Standard Model

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