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Kinetic Gauge Friction in Natural Inflation

Wednesday 12 March 2025 17:15 (5 minutes)

In this talk I will discuss a recently studied extension of the
natural inflation model comprising a non -
Abelian gauge sector coupled to the axion -
inflaton kinetic term . I will show how such non -
minimal coupling serves as a source of friction for the rolling
inflaton granting at least sixty e -
folds of accelerated expansion for sub -
Planckian values of the axion decay constant .
The analysis of perturbations reveals a negative sound speed,
thus signaling an instability . Implementing a Chern - Simons -
type coupling between the inflaton and gauge sectors cures the
instability by delivering a positive speed .
We finalize by presenting a numerical study of scalar and tensor
perturbations for a fiducial set of parameters finding that the
corresponding observables are compatible with current CMB bounds .

Authors: ROEST, Diederik (University of Groningen); DIMASTROGIOVANNI, Ema (University of Groningen); MARTINO MICHELOTTI, Martino (University of Groningen); Dr FASIELLO, Matteo (Institute of Cosmology and Gravitation); GONZALEZ QUAGLIA, Rodrigo (University of Groningen)

Presenter: GONZALEZ QUAGLIA, Rodrigo (University of Groningen)

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