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Axion dark matter from parametric resonance

Thursday 25 September 2025 15:12 (18 minutes)

In this work, we study the cosmological implications of an initial displacement of the Peccei-Quinn breaking field generated during inflation and the subsequent oscillations of the field around its minimum. These oscillations induce a parametric resonance effect, leading to the exponential growth of perturbations. In our analysis, we employ lattice simulations to investigate the abundance of axions produced by this resonance, as well as the formation and dynamics of the resulting topological defects.

Primary authors: SERVANT, Geraldine (T (Cosmology)); GORGHETTO, Marco (T (Cosmology)); INGICCO, Mariachiara (Università degli Studi di Napoli Federico II); NATALE, Riccardo (T (Cosmology))

Presenter: NATALE, Riccardo (T (Cosmology))

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