

Inflation and Higgs Phenomenology in a Model Unifying the DFSZ Axion with the Majoron

Saturday 20 July 2024 17:30 (15 minutes)

The Two-Higgs-Doublet-Standard Model-Axion-Seesaw-Higgs-Portal inflation (2hdSMASH) model consisting of two Higgs doublets, a Standard Model (SM) singlet complex scalar and three SM singlet right-handed neutrinos can embed axion dark matter, neutrino masses and address inflation. We report on an investigation of the inflationary aspects of 2hdSMASH and its subsequent impact on low energy phenomenology.

By analyzing the renormalization-group flow of the parameters we identify the necessary and sufficient constraints for running all parameters perturbatively and maintaining stability from the electroweak to the PLANCK scale. Stringent constraints arise on the singlet scalar self coupling from inflationary constraints. We show that inflation is realized in a variety of field space directions in the effective single field regime. Benchmark scenarios at colliders are provided as well.

Alternate track

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Yes

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Session Classification: Astro-particle Physics and Cosmology

Track Classification: 08. Astro-particle Physics and Cosmology