Contribution ID: **66** Type: **not specified**

Towards Matter Inflation in Effective Heterotic Supergravity Theories

We discuss the phenomenologically interesting scenario of matter inflation in supersymmetric hybrid inflation models. The inflaton is contained in a gauge non-singlet matter multiplet and the eta-problem is solved by a "Heisenberg" symmetry. This symmetry relates the inflaton with a modulus field and we stabilize this modulus via corrections to the Kähler potential. The Heisenberg symmetry arises naturally in the low-energy effective action for the untwisted matter fields in heterotic orbifold compactifications. We construct a class of supergravity models which may be suitable to realise inflation in heterotic orbifolds. Moduli stabilization within the extended setup is discussed.

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