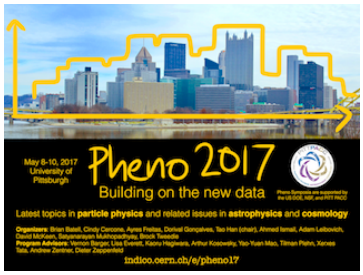

Contribution ID: **331** Type: **parallel talk**

Low-Scale D-term Inflation and the Relaxion

Tuesday, 9 May 2017 17:45 (15 minutes)

We present a dynamical cosmological solution that simultaneously accounts for the early inflationary stage of the Universe and solves the supersymmetric little hierarchy problem via the relaxion mechanism. First, we consider an inflationary potential arising from the D-term of a new $U(1)$ gauge symmetry with a Fayet–Iliopolous term, that is independent of the relaxion. A technically natural, small $U(1)$ gauge coupling, $g < 10^{-8}$, allows for a low Hubble scale of inflation, $H_I < 10^5$ GeV, which is shown to be consistent with Planck data. This feature is then used to realize a supersymmetric two-field relaxion mechanism, where the second field is identified as the inflaton provided that $H_I < 10$ GeV. The inflaton controls the relaxion barrier height allowing the relaxion to evolve in the early Universe and scan the supersymmetric soft masses. After electroweak symmetry is broken, the relaxion settles at a local supersymmetry-breaking minimum with a range of F-term values that can naturally explain supersymmetric soft mass scales up to 10^6 GeV.

Summary

I will discuss low-scale D-term inflation. I will further show how this can be combined with the two-field supersymetric relaxion model.

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