Contribution ID: **132** Type: **not specified**

Gauge Non-Singlet Inflation in SUSY GUTs

Tuesday, 24 August 2010 16:12 (15 minutes)

We explore the novel possibility that the inflaton responsible for cosmological inflation is a gauge non-singlet in supersymmetric Grand Unified Theories. For definiteness we consider SUSY hybrid inflation where we show that the scalar components of gauge non-singlet superfields, together with fields in conjugate representations, may form a D-flat direction suitable for inflation.
We apply these ideas to SUSY models with an Abelian gauge group, a Pati-Salam gauge group and finally Grand Unified Theories based on SO(10) where the scalar components of the matter superfields in the 16s may combine with a single $\bar{1}6$ to form the inflaton, with the right-handed sneutrino direction providing a possible viable trajectory for inflation.
Assuming sneutrino inflation, we calculate the one-loop Coleman-Weinberg corrections and the two-loop corrections from gauge interactions giving rise to the ''gauge eta-problem" and show that both corrections do not spoil inflation, and that the monopole problem can be resolved.

Primary authors: Mr BAUMANN, Jochen P. (Max-Planck-Institut für Physik (Werner-Heisenberg-Institut)); Dr DUTTA, Koushik (Max-Planck-Institut für Physik (Werner-Heisenberg-Institut)); Prof. BASTERO-GIL, Mar (Departamento de Fisica Teórica y del Cosmos and Centro Andaluz de Fisica de Particulas Elementales, Universidad de Granada); Mr KOSTKA, Philipp M. (Max-Planck-Institut für Physik (Werner-Heisenberg-Institut)); Dr ANTUSCH, Stefan (Max-Planck-Institut für Physik (Werner-Heisenberg-Institut)); Prof. KING, Steve F. (School of Physics and Astronomy, University of Southampton)

Presenter: Mr BAUMANN, Jochen P. (Max-Planck-Institut für Physik (Werner-Heisenberg-Institut))

Session Classification: Astro 24-2 Chair: L. Covi

Track Classification: Astro