

Affleck-Dine leptogenesis from Higgs inflation

Neil David Barrie, Chengcheng Han, and Hitoshi Murayama

Center for Theoretical Physics of the Universe, Institute for Basic Science (IBS), Daejeon, 34126, Korea.

We investigate the possibility of simultaneously explaining inflation, the neutrino masses and the baryon asymmetry through extending the Standard Model by a triplet Higgs. The neutrino masses are generated by the vacuum expectation value of the triplet Higgs, while a combination of the triplet and doublet Higgs' plays the role of the inflaton. Additionally, the dynamics of the triplet, and its inherent lepton number violating interactions, lead to the generation of a lepton asymmetry during inflation. The resultant baryon asymmetry, inflationary predictions and neutrino masses are consistent with current observational and experimental results.

[1] Neil D. Barrie, Chengcheng Han, Hitoshi Murayama, *Phys. Rev. Lett.* 128, 141801.