

Fundamental physics in the cosmos: The early, the large and the dark Universe



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Higgs Dynamics During And After Inflation

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Current measurements of the Higgs boson and top quark mass favor metastability of the electroweak vacuum in the Standard Model. This raises some questions when we consider the evolution of our universe: how the Higgs ended up in such an energetically disfavored state? Why it remained there during inflation? These problems can be addressed by assuming that the Higgs couples directly to the inflaton and/or interacts non-minimally with gravity. In this talk I will review the effects of these interactions on the dynamics of the Higgs field during the inflationary period and the subsequent period of particle production, namely reheating. I will show that there exists a favorable range of parameters that allows to explain why the Higgs remained in the electroweak vacuum during the evolution of the universe.

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