

Vacuum stability and early universe physics

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Stability of the electroweak vacuum in the very early universe is a novel probe of high energy physics. A key question is whether new physics beyond SM is required to maintain stability against inflationary fluctuations of the Higgs field. Here curvature couplings induced by radiative corrections in curved space play a crucial role. I review the topic and show that curvature effects can keep the electroweak vacuum stable in the early universe without any new physics. I also comment on the use of vacuum stability as a new test for SM extensions and discuss the observational imprints of inflationary Higgs fluctuations.

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