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Asymptotic Scale Invariance, Electroweak Vacuum Stability and Higgs Inflation

vendredi 29 juin 2018 14:30 (20 minutes)

We discuss a possibility that our electroweak vacuum is absolutely stable even if the top Yukawa coupling is larger than the critical value. Such a scenario can be realized without introducing new particles if we adopt a renormalization prescription which respects the asymptotic scale invariance at the quantum level. Instead, the theory becomes non-renormalizable and the perturbative unitarity is violated at some energy scale. We argue that the perturbative computation of the Higgs effective potential is still justified and hence the quantum scale invariance can actually stabilize our vacuum. We also discuss the Higgs inflation with uncertainties coming from the violation of the perturbative unitarity.

Auteur principal: Dr SHIMADA, Kengo (EPFL)

Orateur: Dr SHIMADA, Kengo (EPFL)

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