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Spacetime curvature and the Higgs stability before and after inflation

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The best fit values for the SM parameters imply that the potential for the Higgs boson developes a Planck-scale vacuum with negative energy, which may result in decay of the current vacuum state. In this talk we show the significance of backreaction from classical gravity for vacuum stability during and after inflation. In particular we show that requiring stability, inflation constrains the non-minimal coupling between the SM Higgs and gravity to be larger than ˜ 0.1 whereas reheating constrains it to be smaller than ˜ 1, if the scale of inflation is large. arXiv:1407.3141 and arXiv:1506.04065.

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