UV behaviour of Higgs inflation models

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We study the ultraviolet behaviour of Higgs inflation models above the apparent unitarity violation scale arising from the large non minimal coupling to gravity, by computing on-shell 4-point scattering amplitudes in an arbitrary inflaton background. The effective Einstein frame cutoff for large inflaton background turns out to be parametrically larger for the U(1) model, than for the realistic doublet Higgs model where the effective Einstein frame cutoff is found to be the standard Mp/sqrt(ξ) for both the Palatini and metric formulations. The same result also holds if an R^2 term is added to the action.

Orateur: GUILLEN, Anthony

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