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Ultraviolet Unitarity Violations in Non-minimally Coupled Scalar-Starobinsky Inflation

Thursday, 15 June 2023 14:40 (20 minutes)

We perform the calculation for tree-level ultraviolet unitarity violation scales for scalar-R^2 inflation models by including an additional R^2|Φ|^2-type term. Due to certain constraints, we resort to the Einstein frame for our calculations, where we separate our analysis between metric and Palatini formulations. We follow recent works in this line that debunk the naive predictions for unitarity violations in Higgs' inflation models to determine how to accurately estimate the behaviour of scattering amplitudes in the UV limit. Later, we work out different cases by assuming potentials corresponding to known inflation scenarios (like Higgs' inflation) so we could predict the range of coupling parameters for which the theories would remain unitary up to the Planckian regime. We also try to find the behaviour of the scattering amplitudes for these theories during the transition from inflationary to reheating epoch.

Secondary category for the parallel session (optional)

Astroparticle Physics

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