
Contribution ID: **83** Type: **not specified**

# Symmetry-improved 2PI Approach to the Infrared Divergences of the Standard Model Effective Potential

*Thursday, 4 December 2014 16:35 (35 minutes)*

The 3-loop Standard Model (SM) effective potential suffers from infrared (IR) divergences due to the Goldstone bosons. These IR problems start at lower loop-orders for the derivatives of the potential. We study these issues by means of the recently developed *symmetry-improved CJT effective action*. Our formalism, as opposed to other existing approaches, is particularly appropriate for studying this problem, since the thresholds of the particles are correctly described within quantum loops. By considering the Higgs and top-quark sectors of the SM we show that, in agreement with other recent approaches, the IR divergences are actually absent, being an artifact of perturbation theory. Moreover, we give preliminary quantitative comparisons with the existing treatments, which are based on partial resummations of perturbation-theory contributions. These IR issues can potentially have an important quantitative impact on the stability analyses of the SM effective potential extrapolated at very high energies, since this is known to be particularly sensitive to the matching conditions at the electroweak scale.

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**Session Classification:** Parallel 5: Strongly coupled gauge theories