

Scalars 2017



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Renormalisation-group improvement of multi-field effective potentials

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Content :

In this talk we present a new method of renormalisation-group (RG) improvement of effective potentials in models with extended scalar sectors. The method amounts to running with the renormalisation scale to a surface in the parameter space where quantum corrections to the effective potential vanish. This can be equivalently understood as fixing the renormalisation scale to a suitably chosen field-dependent value, in analogy to the well-known approach in the one-field case. It allows to evaluate the effective potential using the tree-level form for any values of fields. In the talk we discuss limitations of the method as well as several applications. One of these is the study of stability of the potential beyond tree-level for which the RG improvement is indispensable and which can be simplified with the use of our method.

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