

Renormalization of the general Two-Higgs-Doublet Model

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The Two-Higgs-Doublet Model (THDM) is one of the simplest and most extensively studied extensions of the Standard Model of particle physics (SM). It offers a rich phenomenology, and can, depending on the region in parameter space, address phenomena such as the observed matter-antimatter asymmetry in the universe and dark matter, which cannot be fully explained by the SM.

When computing perturbative predictions for observables in the THDM (or any given QFT model), the choice of renormalization scheme should have no effect on all-order results. However, due to the truncation of the perturbation series, this choice affects the properties of finite-order predictions, such as gauge (in)dependence and perturbative stability. Therefore, it is valuable to study and compare different renormalization schemes with the goal of optimizing for such properties.

In this talk, we will give a brief description of the general THDM and explain the renormalization procedure we performed. Different renormalization schemes will be applied and compared.

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