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Heavy New Physics and Precise Predictions of Higgs Properties: The Decoupling Renormalization Scheme in the two Higgs doublet model

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Precise predictions of Higgs boson observables can be used to constrain models of physics beyond the Standard Model (BSM), particularly in light of the absence of new light particles at the LHC. In models with a heavy BSM scale the choice of renormalization scheme matters as some schemes can result in large one-loop corrections that fail to decouple as the BSM scale grows. In this talk, I will present decoupling renormalization schemes for precise predictions of Higgs boson properties which extends to scales where an effective field theory description breaks down. I will apply the scheme to the two Higgs doublet model highlighting its decoupling properties and better stability at one-loop order compared to other conventional schemes.

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