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Higgs renormalization in the NMSSM

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Abstract content

The most theoretically accepted mechanism for the EW symmetry breaking is the Higgs mechanism. This mechanism has been partially proven through the well measured gauge boson masses. Nevertheless, there is one degree of freedom (in the Standard Model) that still have to be measured experimentally: the Higgs particle, a scalar boson. Supersymmetric models predicts multiple Higgs particle as residuary of such mechanism.

Nowadays the greatest experimental world wide effort is been carried out to find the Higgs, in the largest colliders ever builded: the LEP and LHC at CERN and Tevatron at Fermilab. In order for the theory to achieve the same level of experimental precision to compare the data, we need to implement the quantum effects involved in the Higgs sector through a Taylor expansion of coupling constants, and in this way be able to obtain finite radiative corrected Higgs masses, i.e. renormalized masses. In this work we present the calculation for the renormalized Higgs masses in a Next-to-Minimal Supersymmetric Standard Model (NMSSM). We will also motivate this model over the MSSM.

Summary

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