

Aligned Two Higgs Doublet Model and electric dipole moment of electron (24+6)

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Electric dipole moment of electron (eEDM) is an interesting observable to search for new sources of CP violation and hence for prospect of BSM scenarios. In the SM, eEDM starts getting contributions from four-loop order, and thus it poses an extremely tiny value of $d_e^{SM} \leq 10^{-38} e cm$. However, the current experimental bound on eEDM is $d_e^{exp} \leq 10^{-30} e cm$ which leaves a large room for the BSM scenarios to be considered. Aligned two Higgs doublet model (A2HDM) is a simplest extension of the SM. It can provide CP violation in both scalar and Yukawa sector resulting in a larger value of eEDM. We have studied the full two-loop contribution to eEDM in this model. We reproduce the same leading log behaviour from the EFT approach too.

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