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Triple Higgs couplings in the 2HDM at future linear colliders

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In the framework of the CP conserving Two Higgs Doublet Model (2HDM), type I and II, we analyze the sensitivity to triple Higgs couplings at future high(er) energy electron-positron colliders, such as ILC and CLIC. We study the production cross section of two neutral Higgs bosons in two channels: $e^+e^- \rightarrow h_i h_j Z$ and $e^+e^- \rightarrow h_i h_j \nu \bar{\nu}$ within several benchmark planes that exhibit large values of triple Higgs couplings while being in agreement with all existing theoretical and experimental constraints. We analyze the sensitivity to the triple Higgs couplings of those processes and how they can change with the energy, in particular at the energy stages and luminosities projected for the future linear colliders. We finally present some individual points to illustrate in more detail the effects of the triple Higgs couplings on the di-Higgs production cross sections and we discuss possible strategies to reach sensitivity to the triple Higgs couplings.

Time Zone

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