



Contribution ID: 719

Type: **Parallel Talk**

Effects of Extra Yukawa Couplings and Alignment

Friday, July 7, 2017 6:15 PM (15 minutes)

The two Higgs doublet model without any ad hoc symmetries, in general should have extra Yukawa interactions which cause exotic interactions such as flavor changing neutral processes. Effects of the extra Yukawa interactions can also appear in couplings of the 125 GeV Higgs boson (h) via fermion loop contributions. In this talk, we calculate the hZZ coupling expected to be measured with $\mathcal{O}(1)\%$ accuracy at future lepton collider experiments, at the one-loop level by the on-shell renormalization scheme, and evaluate how the hZZ coupling depends on the mass of extra Higgs bosons and the extra Yukawa coupling ρ_{tt} . We find that if $\rho_{tt} \cos \gamma < 0$, where γ is a mixing angle of CP-even Higgs bosons, the ρ_{tt} effect induced top loop contribution cancels extra Higgs boson loop contributions and one may have alignment without decoupling, but exotic scalar bosons could have masses at several hundred GeV. We also discuss whether future precision coupling measurements can give stronger bound on ρ_{tt} than the current bound from flavor experiments.

Experimental Collaboration

Primary author: Dr KIKUCHI, Mariko**Presenter:** Dr KIKUCHI, Mariko**Session Classification:** Higgs and new physics**Track Classification:** Higgs and New Physics