



Contribution ID: 326

Type: **Parallel session talk**

Determination of CP-violating Higgs couplings with transversely-polarized beams at the ILC

Thursday 24 August 2023 09:06 (18 minutes)

e study possible CP-violation effect of the Higgs to Z boson coupling at the future e^+e^- collider. We find that the azimuthal angular distribution of the muon, produced by $e^+e^- \rightarrow HZ \rightarrow H\mu^-\mu^+$, can be sensitive to such a CP-violation effect when we apply initial transversely polarized beams. Based on this angular distribution, we construct a CP sensitive asymmetry, and obtain this asymmetry by Whizard simulation. By comparing the SM prediction with 2σ -range of this asymmetry, we estimate the discovery limit of the CP-odd coupling in HZZ interaction, which is $\tilde{c}_{AZZ} \in [-0.1, 0.1]$ for 500 fb^{-1} , and $\tilde{c}_{AZZ} \in [-0.05, 0.05]$ for 2000 fb^{-1} .

Collaboration / Activity

Non

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Session Classification: T09 Higgs Physics

Track Classification: Higgs Physics