

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

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We study possible CP-violation effects of the Higgs to Z-boson coupling at a future e^+e^- collider, e.g. the International Linear Collider (ILC). We find that the azimuthal angular distribution of the muon pair, 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 limit of the CP-odd coupling in HZZ interaction, including as well studies from unpolarized and longitudinally-polarized beams.

Alternate track

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Primary authors: LI, Cheng; REHBERG, Nico (University of Hamburg); MOORTGAT-PICK, gudrid

Presenter: LI, Cheng

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