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

Tuesday 9 July 2024 09:30 (20 minutes)

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  $2\sigma$  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.

### Apply for poster award

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