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ZH angular measurements and anomalous CP-even & CP-odd HZZ couplings at future Higgs factories

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The angular distributions in the $e^+e^- \rightarrow ZH \rightarrow f\bar{f}H$ process provide a new probe to the BSM physics on top of the signal strength, in particular useful when BSM physics induces anomalous couplings with new Lorentz structure. Those anomalous couplings result in changes in event shape that are highly dependent on the collision energies. In this study we perform full detector simulation of the ZH angular measurements and give prospects of the sensitivity to both CP-even and CP-odd anomalous HZZ couplings at future Higgs factories. We also present new ideas about the optimal collision energies which may improve significantly the sensitivity to anomalous couplings. The full simulation analyses are carried out based on the ILD detector concept at the International Linear Collider, however the methods in our study are generic and applicable to all future Higgs factories.

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