

Scalars 2023

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Probing anomalous $ZZ\gamma$ and $Z\gamma\gamma$ couplings at the e^+e^- colliders using the optimal observable technique

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Content :

We study the anomalous $ZZ\gamma$ and $Z\gamma\gamma$ couplings that can be probed via $Z\gamma$ production at the e^+e^- colliders. We take Standard Model Effective Field Theory (SMEFT) approach to examine these anomalous neutral triple gauge couplings in a model-independent way. There are four independent dimension-8 operators that generate these gauge interactions, one of them is CP-conserving and rest three are CP-violating. We adopt optimal observable technique to extract the sensitivity at which these anomalous couplings can be probed at future e^+e^- colliders and then compare the results with the latest experimental limit obtained at the LHC. We also study the impact and advantage of beam polarization in these precision measurements. Statistical limit (95% C.L.) on individual anomalous couplings as well as the correlation between various couplings have been discussed in detail.

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