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Sensitivity to anomalous VVH couplings at the ILC

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The discovery of the 125 GeV Higgs boson, which was the last missing element of the standard model (SM), provided us the insight that the electroweak symmetry breaking is done by a Higgs condensate in the vacuum, namely the Higgs mechanism. However the SM does not give the dynamics explaining why and how that Higgs condensate is formed. On the other hand, the SM can not provide candidate particles for the dark matter, and can not explain the baryon number asymmetry in our universe, etc.. Therefore new physics beyond the SM is needed to answer all of those questions. Remarkably the effects of new physics will be inevitably imprinted in the properties of the Higgs boson, namely its couplings to other SM particles and its CP nature. At the future International Linear Collider (ILC), one of the most important goals is precise measurement those properties.

In this talk, we will focus on the measurement of the general Lorentz structure of couplings between Higgs and vector bosons (VVH, V=Z or W) at the ILC, based on an approach of the effective field theory. The sensitivities to both CP-even and CP-odd dimension-5 operators are evaluated by exploring various Higgs production and decay channels, in particular taking advantage of the sensitivities from differential cross sections measurements. The studies are performed based on full detector simulation of the International Large Detector (ILD), for ECM = 250 GeV and 500 GeV. Combined sensitivities are given for some realistic running scenarios of the ILC.

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