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Optimal Collision Energy for Higgs Precision Measurements at the ILC250

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The ILC is currently proposed to be running at 250 GeV at the initial stage, based on the fact that the cross section of the leading Higgs production channel (ZH) peaks at more or less 250 GeV. Due to the effects of beamstraglung and initial state radiation which shift the effective center of mass energies, the more optimal collision energy has not been known yet. First, we will carry out analyses of the ZH cross section measurement and evaluate the impact of the collision energy by a scan between 240 to 260 GeV. Second, the effects of anomalous Higgs couplings between Higgs and ZZ are momentum-dependent, thus very much sensitive to the collision energies. More over, having the anomalous HZZ couplings measured at a couple of energy points may provide significant improvement due to the large correlation between anomalous and SM-like HZZ couplings. We will carry out such studies and propose a new scenario of collision energy for the ILC250.

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