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Higgs boson couplings at muon collider

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Muon collisions at multi-TeV center of mass energies are ideal for studying Higgs boson properties. Precise measurements of its couplings to fermions and bosons will be allowed by the high production rates that can be reached at these energies. Furthermore the double Higgs boson production rate could be sufficiently high to directly measure the parameters of trilinear self-couplings, giving access to the determination of the Higgs potential.

In this presentation an overview of the results that have been obtained so far on Higgs couplings by studying the $\mu^+\mu^- \rightarrow H\nu\bar{\nu}$ and $\mu^+\mu^- \rightarrow HH\nu\bar{\nu}$ processes at \sqrt{s} of 3 TeV will be given. All these studies have been performed by fully simulating the signal and physics background samples and by evaluating the effects of the beam-induced background on the detector performances.

Evaluations on Higgs boson couplings sensitivities and most recent results on the uncertainty on double Higgs production cross section and the trilinear Higgs self-coupling, will be presented and discussed.

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