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A theoretical review of triple Higgs coupling studies at the LHC

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After the discovery of a Higgs boson at the LHC, the next important step is to measure its couplings to fermions and boson to unravel its true nature, in particular to look for effects beyond the Standard Model (SM). In order to ultimately test the shape of the scalar potential that triggers the electroweak symmetry breaking, it is crucial to measure the trilinear Higgs coupling at the LHC. This talk will present the theoretical status of the SM Higgs pair production mechanisms that are needed for such a measurement and some preliminary studies for a high luminosity LHC.

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