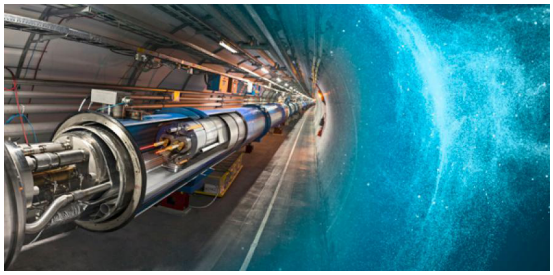

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CP-even Heavy Higgs boson at HL-LHC

Wednesday, 23 March 2022 14:45 (15 minutes)

We investigate the possibility of observing a havey Higgs boson (H) within the context of type-I 2 Higgs Doublet Model (2HDM). Our study is focused on $gg \rightarrow \ H \rightarrow hh \rightarrow b\bar{b}\ ZZ \rightarrow b\bar{b}4\mu$ for H production and decay. The study is done assuming a data-set of size 3000 fb^{-1} of proton-proton collisions at $\sqrt{s} = 14$ TeV at High Luminosity Large Hadron Collider (HL-LHC). According to scans over the parameter space, we consider two promising benchmark points for this analysis. Signal and background samples are produced using MonteCarlo (MC) simulation where the detector response is based on CMS detector PhaseII Upgrade. We find that the mass distributions of our signal are consistent with those obtained by previous experimental study performed on HHbb4l channel where they investigated the self Higgs coupling using the full Run2 data of the CMS detector with $\sqrt{s} = 13$ TeV and $L_{int} = 137 fb^{-1}$.

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