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# Higgs physics at 10 TeV Muon Collider

This contribution discusses the physics potential of a future muon collider operating at a center-of-mass energy $\sqrt{s} = 10$ TeV for precision studies in the Higgs sector. Using a detailed detector simulation that incorporates the dominant sources of machine-induced background, the expected sensitivity to key Higgs processes is evaluated. These include the measurement of production cross sections for $H \to b\bar{b}$, $H \to WW^*$, and double-Higgs production $HH \to b\bar{b}b\bar{b}$. A central focus of the study is the determination of the Higgs boson trilinear self-coupling, a critical parameter for understanding the structure of the Higgs potential and electroweak symmetry breaking. The analysis is based on the MUSIC (MUon System for Interesting Collisions) detector concept, specifically optimized for the muon collider environment, and assumes an integrated luminosity of 10 $ab^{-1}$ collected over five years. The results presented highlight the exceptional prospects of a multi-TeV muon collider for exploring the Higgs potential with a level of precision unattainable by any other proposed future collider within a comparable timeframe.

## Secondary track

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