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Prospects for the measurement of $\sigma_H \times \text{BR}(H \rightarrow \mu\mu)$ at a 3-TeV muon collider

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Among the projects currently under study for the next generation of particle accelerators, the muon collider represents a unique machine, which has the capability to provide leptonic collisions at energies of several TeV. The multi-TeV energy regime is as yet unexplored and holds a huge physical potential that will enable a novel research programme ranging from high precision measurements of known standard model processes to high-sensitivity searches for phenomena beyond the standard model.

A multi-TeV muon collider will produce huge samples of Higgs bosons that will allow a precise determination of the Higgs boson properties, like its couplings to fermions and bosons and its trilinear and quartic self-couplings with unprecedented precision.

This contribution will present an estimate of the muon collider reach on the production of the process $H \rightarrow \mu\mu$, one of the rarest Higgs boson decays that represents a gateway to the determination of the Higgs boson coupling to the second generation leptons.

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