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Higgs self coupling at a 10 TeV Muon Collider

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The 2025 ESPPU highlights the extended characterization of the Higgs potential as a priority for future experiments, as it allows the determination of the Standard Model vacuum stability and the test of various Beyond Standard Model hypotheses, paving the way for the study of the electroweak phase transition in the early Universe. A 10 TeV Muon Collider is predicted to produce $O(10^4)$ double Higgs events in 5 Snowmass-years of operation. This and its relatively clean collision environment would allow a Muon Collider to measure the Higgs self-coupling down to the percent level. Also, a 10 Snowmass-years run could enable the determination of the Higgs' quartic coupling, with an uncertainty of about 50%. This contribution discusses the expected accuracy of the double Higgs cross-section at a 10 TeV Muon Collider using detailed detector simulations, including physics and machine backgrounds.

Muon dipole moments (magnetic and electric): theory, experiments and future perspectives

Charged lepton flavor violation: theory, experiment and future perspectives

New Physics opportunities with low and high energy muon beams

none

Neutrino physics with muon beams: theory, experiments and future perspectives

Muons beams technologies: production, cooling and acceleration at different energy

Advancements in Muon-based Facilities and Broader Applications

Muons in other fields: muography, muon spin spectroscopy, muon-catalyzed fusion

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