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Higgs measurements at muon collider DONATELLA LUCCHESI, University and INFN of Padova, NAZAR BARTOSIK, INFN Torino, LAURA BUONINCONTRI, University and INFN of Padova, MASSIMO CASARSA, INFN Trieste, FRANCESCO COLLAMATI, INFN Roma1, ANNA FERRARI, Helmholtz-Zentrum Dresden-Rossendorf, ALESSIO GIANELLE, INFN Padova, BARBARA MELE, INFN Roma1, NIKOLAI MOKHOV, Fermilab, MARK PALMER, Brookhaven National Laboratory, NADIA PASTRONE, INFN Torino, PAOLA SALA, INFN Milano, LORENZO SESTINI, INFN Padova, SERGEI STRIGANOV, Fermilab — Muon collisions at multi-TeV center-of-mass energies are perfect for studying the Higgs-boson properties. The number of produced Higgs bosons will allow to measure its couplings to fermions and bosons with an unprecedented precision. At $\sqrt{s}$ of the order of or greater than 10 TeV and with an instantaneous luminosity of at least $10^{35} cm^{-2} s^{-1}$ the double (triple) Higgs-boson production rate will be sufficiently high to directly measure the parameters of trilinear (quadrilinear) self-couplings, enabling the precise determination of the Higgs boson potential. The studies presented here, performed with a full simulation of the detector and the beam-induced background, demonstrate that the use of novel detector technologies allows to keep the detector occupancy at a manageable level. By using a simple cut-based approach, the b-jet invariant mass is reconstructed to identify the Higgs-boson. A first conservative evaluation of its coupling sensitivity at $\sqrt{s}$ of 3 and 10 TeV will be presented using the detector performance evaluated at 1.5 TeV, demonstrating that high precision Higgs measurements are possible at muon collider.

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