

Prospects for the Measurement of the Standard Model Higgs Production at the Muon Colliders

We study the Higgs production process at a muon collider using b-pair decays of the Higgs bosons. Efficient identification and good measurement resolution for the b-jet pair invariant mass are crucial for unearthing the Higgs signal. However, the beam-induced background has potential to drastically degrade the performance. We report on the full simulation studies of the degradation of the reconstructed b-jet pair invariant mass, considering only the beam-induced background in the calorimeter. Mitigation strategies for the suppression of the beam-induced background are under-way. We also report prospects for the measurement of the Standard Model Higgs production at the Muon Colliders at various benchmarks of the collider center of mass energy and integrated luminosity using a fast simulation program.

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