

Beam-induced background simulations in calorimeter at a muon collider

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A future high energy muon collider can probe the multi-TeV regime and greatly improve our understanding of the Higgs self-coupling. One of the major challenges to detector performance is the beam induced background (BIB) which comes from muon decays along the beam pipe. The upstream and downstream electromagnetic showers blanket the detector with low energy photons, electrons and neutrons. Powerful BIB mitigation strategies have to be employed to study physics potential at a muon collider environment. We focus on the BIB appearing in the calorimeter and study the performance of jet reconstruction algorithm. We investigate the effect of various energy thresholds on the calorimeter hits and how it depends on the hit depth inside the calorimeter.

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