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Muon beam-induced background mitigation with neuromorphic AI

In any muon collider detector, abundant beam-induced backgrounds will challenge reconstruction algorithms. Cell-specific minimum-energy thresholds have shown some effectiveness in reducing diffuse, low-energy BIB contributions during digitization in a simulated 10TeV muon collider detector, but further research is needed to optimize these methods. This project aims to explore the use of timing-sensitive energy thresholding by neuromorphic computing algorithms to mitigate beam-induced backgrounds in electromagnetic calorimeter (ECAL) readout. The performance of several other thresholding methods will be examined for comparison.

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