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Data-driven track reconstruction performance studies in MicroBooNE

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MicroBooNE is a liquid argon time projection chamber (LArTPC) experiment situated at the Fermilab Booster Neutrino Beam beamline. Event reconstruction is a crucial foundation for MicroBooNE's neutrino interaction measurements and searches for new physics. In this work, we have selected a sample of muon neutrino-induced muon tracks and then performed data to Monte Carlo comparisons. These results were used to evaluate the performance of Pandora-based algorithms for track, vertex and momentum reconstruction. The techniques applied here can be used to validate detector systematics and disentangle them from other sources. Beyond MicroBooNE, these algorithms and techniques for data-driven studies are also relevant to future LArTPC experiments including the Deep Underground Neutrino Experiment (DUNE) and the Short-Baseline Neutrino (SBN) Program.

Summary

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