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Event Reconstruction Improvements with Machine Learning in SBND

Monday, August 24, 2020 11:15 AM (15 minutes)

The Short Baseline Near Detector (SBND) is the closest of three surface level Liquid Argon Time Projection Chambers (LAr TPCs) in the Short Baseline Neutrino (SBN) programme at Fermilab. Situated 110m into the Booster Neutrino Beam (BNB), SBND has a rich cross-section programme alongside its role in the SBN sterile neutrino search. SBND uses Pandora multi-algorithm pattern recognition to reconstruct 3D particles, complete with a particle flow hierarchy. This talk will describe recent efforts to incorporate machine learning techniques into the Pandora reconstruction workflow in SBND to improve the neutrino vertex reconstruction, track/shower identification and cosmic rejection. The results presented show significant improvements in each of these areas.

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