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Automated Neutrino Interaction Reconstruction and Particle Classification using Machine Learning in DUNE

Thursday, May 12, 2022 5:00 PM (20 minutes)

The upcoming Deep Underground Neutrino Experiment (DUNE) will provide answers to longstanding questions in neutrino physics, including the ordering of neutrino masses and the value of the CP-violating phase, δ_{CP}. Utilizing liquid argon time projection chamber (LArTPC) technology, DUNE will rely on automated reconstruction of neutrino interactions and classification of final-state particles. To this end, multiple machine learning (ML) techniques have been developed to aid in the reconstruction and classification of particle objects in both the near and far detectors and in the prototype DUNE single-phase detector (ProtoDUNE-SP). This talk presents an overview of the current status of DUNE ML efforts, including performance metrics and future avenues to pursue.

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