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Deep-learning at DUNE Far Detector

Monday 13 May 2024 16:45 (15 minutes)

DUNE is the flagship of the next generation of neutrino experiments in the United States. It is designed to decisively measure neutrino CP violation and the mass hierarchy. It utilizes the Liquid Argon Time Projection Chamber (LArTPC) technology, which provides exceptional spatial resolution and the potential to accurately identify final state particles and neutrino events. DUNE's high resolution LArTPC increases the difficulty of reconstructing and identifying neutrino events at DUNE. Deep learning techniques offer a promising solution to this problem. At DUNE, convolutional neural networks, graph neural networks and transformers are being developed and have already shown promising results in kinematic reconstruction, clustering and event/particle identification. Deep learning methods have also been preliminarily tested on data from the DUNE prototype detector ProtoDUNE at CERN. In this talk, I will discuss the development of these deep-learning-based reconstruction methods at DUNE.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

Presenter: Prof. BIAN, Jianming (University of California Irvine (US))

Session Classification: Minisymposium