

NuMI Electron Neutrino Selection at ICARUS with Machine Learning Reconstruction

venerdì 21 giugno 2024 17:30 (2 ore)

The ICARUS T600 Liquid Argon Time Projection Chamber (LArTPC) detector is the far detector of the Short Baseline Neutrino (SBN) Program located at Fermilab National Laboratory (FNAL). The data collection for ICARUS began in May 2021, utilizing neutrinos from the Booster Neutrino Beam (BNB) and the Neutrinos at the Main Injector off-axis beam (NuMI). The SBN Program has been designed to investigate the observed neutrino anomalies e.g. the former electron neutrino excess from the LSND experiment and the more recent MiniBooNE anomaly. To analyze collected neutrino data, we utilize two methods of event reconstruction: (1) the Pandora multi-algorithm approach to automated pattern recognition, and (2) an approach making use of machine learning (ML). With these reconstruction methods, we improve our identification and energy reconstruction of track-like and shower-like particles. These improvements give us greater precision and accuracy in our electron neutrino measurements. I will present an overview of the ML reconstruction, a selection of the electron neutrinos coming from the NuMI off-axis beam, and the future of electron neutrino analyses utilizing ML reconstruction at ICARUS.

Poster prize

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Classifica Sessioni: Poster session and reception 2

Classificazione della track: Neutrino interactions