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Selection of 1 Electron - 1 Proton Events for the MicroBoonE Deep Learning-based Low Energy Excess Search

MicroBooNE is an 85 ton active volume liquid argon time projection chamber (LArTPC) neutrino experiment located at Fermi National Laboratory. The primary physics goal of the experiment is to investigate the excess of low-energy electron-neutrino-like events seen by the MiniBooNE experiment. MicroBooNE's primary strength lies in its capability to produce high resolution event images. These images lend themselves naturally to modern image analysis techniques using neural networks. In this poster, we present a novel method of identifying charged current quasi elastic (CCQE) like electron neutrino events with a specific 1-lepton 1-proton topology using deep learning and other techniques. Using these techniques, we can achieve high purity samples of electron neutrino events with which the MiniBooNE excess can be investigated.

Mini-abstract

Using deep learning in MicroBooNE to select electron neutrinos for the MiniBooNE excess search

Experiment/Collaboration

MicroBooNE

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