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Muon Neutrino Disappearance in the Short Baseline Neutrino Program

The accelerator neutrino experiments LSND and MiniBooNE both detected an excess of electron-like events at a short-baseline, anomalous with the standard three-neutrino oscillation picture. These results indicate the possibility of new eV-scale sterile neutrinos, but also may be an artifact of the poorly understood interactions between neutrinos and heavy nuclei. The Short-Baseline Neutrino (SBN) program at Fermilab will address this outstanding anomaly in neutrino physics through searches for muon neutrino disappearance and electron neutrino appearance in its muon neutrino beam. This analysis presents a preliminary muon neutrino charged current event selection in SBN based on detector simulation toward a future muon neutrino disappearance result. It demonstrates the ability of the SBN detectors to select a high purity of muon neutrino charged current interactions against the large background of cosmic muons at the earth's surface.

Mini-abstract

Preliminary simulation-based muon neutrino event selection in the Short Baseline Neutrino Program

Experiment/Collaboration

Short Baseline Neutrino Program

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