

First Results from the MiniBooNE Oscillation Experiment at Fermilab

This seminar reports the initial results from a search for muon neutrino to electron neutrino oscillations by the MiniBooNE Collaboration. MiniBooNE was motivated by the result from the LSND experiment which presented evidence for oscillations at the Δm^2 scale around 1 eV^2 .

The MiniBooNE experiment uses a high intensity neutrino beam produced by protons from the Fermilab Booster accelerator; the average muon neutrino energy for this beam is $\sim 800 \text{ MeV}$.

A 1 kton pure mineral oil detector instrumented with ~ 1500 photomultiplier tubes is placed 540 m away from the production target and used to identify and measure muon or electron neutrino events. MiniBooNE performed a "blind" analysis, where all analysis selections and fitting procedures are determined before candidate electron neutrino events are examined. Results of this analysis will be presented for the current neutrino mode data set corresponding to 5.58×10^{20} protons on target.



Presented by Prof. Mike Shaevitz

Physics Department Columbia University