

MicroBooNE - a not-so-micro LArTPC

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MicroBooNE is a short baseline neutrino experiment with a liquid argon time projection chamber (LArTPC) located 470m downstream of the proton target in the Fermilab Booster Neutrino Beam. The LArTPC detection technology delivers bubble-chamber image quality of the neutrino interaction with a fully automated triggering, readout and reconstruction chain. With sensitivity in the neutrino energy region between 100 MeV and 2 GeV, MicroBooNE is about to deliver a large statistic sample for interaction processes in the quasi-elastic and resonance regimes, much in demand for the theoretical understanding of neutrino interactions and how they are influenced by nuclear effects. The setup of MicroBooNE in an L/E region similar to the LSND and MiniBooNE experiments will further investigate their electron neutrino appearance measurements, potentially being an indication for the existence of sterile neutrino flavors. In particular, MicroBooNE will be able to resolve the nature of the yet unexplained excess of electron-like events in the energy region of 200 to 475 MeV observed by MiniBooNE.

MicroBooNE is also serving as a technology demonstrator for future liquid-argon experiments, such as the next long-distance neutrino oscillation experiment ELBNF, and it represents the first detector of Fermilab's short-baseline neutrino program (SBN).

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