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Detector Performance of the MicroBooNE LArTPC

The Liquid Argon Time Projection Chamber (LArTPC) is increasingly becoming the chosen technology for both current and future precision neutrino oscillation experiments. One of the primary challenges in employing LArTPC technology is characterizing the performance of this technology and quantifying the associated systematic uncertainties. The MicroBooNE experiment plays a crucial role in understanding the technology by performing numerous measurements. These include identification and filtering of excess TPC noise, energy scale calibration, electron diffusion, recombination, and measurements of drift electron attenuation. MicroBooNE, residing on the surface, can also provide significant information about cosmic ray induced space charge in the TPC volume and the resulting distortions to the electric field. This talk will provide an overview of detector physics studies in MicroBooNE along with highlighting recent results. A brief introduction to the detector sub-systems, the procedure for calorimetric calibration in LArTPCs, and a novel technique for assessing detector systematics will also be presented.

Primary author: Dr TANG, Wei (University of Tennessee)

Co-author: MICROBOONE COLLABORATION

Presenter: Dr TANG, Wei (University of Tennessee)

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