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Wire-Cell 3D imaging, clustering, and charge-light matching to select neutrino activities in the MicroBooNE LArTPC

An accurate and efficient event reconstruction is an imperative element in realizing the full scientific capability of liquid argon time projection chambers (LArTPCs). The massive LArTPCs in current and future neutrino experiments create a need for new ideas and reconstruction approaches. In this poster, we describe the principles and algorithms of the novel Wire-Cell 3D event reconstruction techniques applicable to LArTPCs with wire readouts, including 3D imaging, clustering of 3D space points, and many-to-many charge-light matching. We present their successful applications in MicroBooNE data, as well as a quantitative evaluation of their performance.

Mini-abstract

Wire-Cell 3D reconstruction enables high performance neutrino selection in MicroBooNE experiment

Experiment/Collaboration

MicroBooNE

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