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Recent Progress on Wire-Cell 3D Event Reconstruction in MicroBooNE WENQIANG GU, Brookhaven National Laboratory, MICROBOONE COLLABORATION — The single-phase liquid argon time projection chamber (LArTPC) provides a large amount of detailed information in the form of fine-grained measurements of ionization electrons and scintillation light from particle traces. The MicroBooNE detector has an active mass of 85 tons of liquid argon and is located along the Booster Neutrino Beam (BNB) at Fermilab. It will examine a rich assortment of physics topics, such as searches for a light sterile neutrino and measurements of neutrino-Argon interaction cross sections. The Wire-Cell event reconstruction is a novel tomographic event reconstruction paradigm for LArTPCs. It reconstructs topology-agnostic 3D space points based on multiple 2D projection views of the TPC activity by utilizing geometry, time, charge, and sparseness in spatial distribution to reduce ambiguity from individual 2D views. In this talk, we present the principle of the Wire-Cell 3D event reconstruction, including 3D charge imaging and charge-light matching, and its application to MicroBooNE data. We also report on the progress of the subsequent 3D tracking based on Wire-Cell 3D images.

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