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Signal Simulation and Processing in the MicroBooNE LArTPC

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MicroBooNE is an 85-ton Liquid Argon Time Projection Chamber (LArTPC) and the first of a trio of LArTPCs in the Short Baseline Neutrino (SBN) program which will search for a light sterile neutrino and measure neutrino-argon interaction cross sections. Located in the Booster neutrino beam at Fermi National Accelerator Laboratory, MicroBooNE has been taking neutrino data since October 2015. In this talk, we will describe the reconstruction of the distribution of ionization electrons given the induced current in all wire planes. Owing to the ultra-low noise cold electronics inside the LAr, the first successful extraction of the ionization charge from the induction wire planes in single-phase LArTPCs has been achieved. This development opens up new possibilities for using charge information to assist the event reconstruction. Latest results of a quantitative evaluation of the signal processing using full TPC signal simulation and a comparison of data and Monte Carlo will be shown.

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