

Abstract Submitted
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Software-based cosmic ray mitigation for neutrino event reconstruction in MicroBooNE¹ CHRISTOPHER BARNES, University of Michigan, MICROBOONE TEAM — MicroBooNE is a Liquid Argon Time Projection Chamber (LArTPC) currently taking data in the Booster Neutrino Beamline at Fermilab. The TPC wires and a set of PhotoMultiplier Tubes (PMTs) provide a three dimensional picture of each neutrino event. Through-going cosmic ray muons represent a significant background for identifying and reconstructing neutrino events. The two wire coordinate positions of each muon can be reconstructed from wire plane information, but the time at which the muon passes through the TPC (T0) is more challenging to determine. In this study, I reconstruct the T0 of detector-crossing cosmic ray muons from the particle's position at its closest approach to the anode or cathode using TPC-only information. To ensure that the T0 determination is accurate, I compare it to the flash of light closest in time according to the PMTs. This method can be incorporated into the MicroBooNE reconstruction software to efficiently and accurately identify cosmic ray muons. This talk will present the status and applicability of this algorithm for studying neutrino events in MicroBooNE.

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