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Measurement of Electron Attenuation using Cosmic Ray Muons in the MicroBooNE Detector

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The MicroBooNE experiment at Fermilab uses liquid argon time projection chamber (LArTPC) technology to study neutrino interactions in argon. A fundamental requirement for LArTPCs is to achieve and maintain a low level of electronegative contaminants in the liquid to minimize the capture of drifting ionization electrons. The attenuation time for the drifting electrons should be long compared to the maximum drift time, so that the signals from particle tracks that generate ionization electrons with long drift paths can be detected efficiently. In this talk, we present MicroBooNE's measurement of electron attenuation using cosmic ray muons. The result yields a minimum electron 1/e lifetime of 18 ms under typical operating conditions, which is long compared to the maximum drift time of 2.3 ms.

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