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Charge Flash Matching in SBN's near and far detectors to discard cosmic ray backgrounds

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The SBN program consists of three surface liquid argon time projection chambers (LArTPC) detectors on the Booster Neutrino Beam line at Fermilab, devoted to probe neutrino oscillations at the $\sim 1\text{eV}^2$ scale. SBND is the near detector, located at 110 m from the source, with a mass of 112 tons. Because of the inherent long readout times of LArTPCs and the lack of shielding, cosmic rays are the main source of background. Charge particles traversing the detector ionise the media, creating electrons and scintillation light. This talk describes a reconstruction algorithm that associates the electrons and the scintillation from interactions. We present the simulated performance to discard cosmic induced interactions, and finish with a method to use the scintillation light to aid with the charge reconstruction of challenging events.

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