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Event reconstruction of high-energy neutrino interactions in large liquid scintillator detectors

Plans to utilize large Liquid Scintillator (LSc) detectors for the determination of mass hierarchy with beams like CN2PY proposed by LAGUNA-LBNO require rudimentary flavor sensitivity and basic track reconstruction especially in the 1-10 GeV range. At these energies neutrino induced events cannot be considered as point-like and the reconstruction of event topology gains importance in flavor discrimination. Consequently the tracking capabilities of the detector become the key parameter in reliable energy determination, discrimination of the flavor of the interacting neutrino and in separation between charged current and neutral current interactions. This poster summarizes the results of our studies on the tracking of high-energy charged particles and highlights their implications on the physics potential of next-generation LSc detectors.

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Track Classification: Long Baseline Oscillations