

Omnidirectional Photon Time Projection with Large Liquid Neutrino Detectors

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The liquid scintillation and Cherenkov detectors are the selected detection technologies for next-generation neutrino detectors at 10-100kt scale. Traditionally, they function primarily as calorimeters. Time-of-flight methods have long been employed to reconstruct event vertices. With the advancement of fast photon-sensors and electronics readout, as well as mathematical and computational imaging theories, it has become feasible to extract particle interaction tracks from data analysis, akin to time projection chambers with omnidirectional photons in place of drifted electrons.

In this talk, I am going to review the efforts on a unified fully probabilistic scintillation-Cherenkov reconstruction framework to open up new paradigms for tracking in non-segmented large liquid detectors.

Collaboration you are representing

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