

MeV-scale event-by-event direction reconstruction with Jinping 1-ton slow liquid scintillator prototype

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The direction of individual AmBe γ has been reconstructed using Jinping 1-ton prototype in slow liquid scintillator phase, with consideration of neutron-induced nuclear recoil effects. Through custom waveform analysis of readout signals, we extracted photoelectron (PE) information per trigger event, including PE number and time. Cherenkov and scintillation light were divided according to the PE time, and a maximum likelihood method was applied to reconstruct the direction of individual γ . The analysis reveals strong correlation between reconstructed particle directions and the position vectors connecting event vertices to the AmBe position. This event-by-event reconstruction capability enables new approaches to neutrino source directionality measurements and improves background discrimination in MeV-scale neutrino experiments.

Collaboration you are representing

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Authors: Dr LUO, Wentai (Tsinghua University); ZHU, Yutao (Tsinghua University); ZHANG, Zhicai (Tsinghua University)

Presenter: ZHU, Yutao (Tsinghua University)

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