Poster Session – Submission of Abstract

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Title of the Poster: Reconstruction of Spallation Neutron Kinematics in Antineutrino Detectors

Abstract Text:

Fast neutron backgrounds from cosmic-ray muons have been carefully studied in reactor neutrino experiments such as the Daya Bay Reactor Neutrino Experiment. In this poster, we present our study of the neutron initial vertex and energy at the beginning of its scattering process inside an oil-based scintillator detector. In our study, a method is developed to reconstruct the proton recoil events excited by fast neutrons in Daya Bay. From physics data, we derive the preliminary selection of muon samples that correlate with spallation neutron captures. Monte Carlo simulation of muons and neutrons in our antineutrino detector is carried out to study all possible interactions and selection efficiency for fast neutrons.

Summary:

Daya Bay; Reactor Neutrino; Spallation Neutron; Fast Neutron; Cosmic-ray Muon; Proton Recoil; Proton Quenching; Anti-neutrino Detector; Optical Model; Reconstruction; Simulation; Monte Carlo;