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Detector characterization and calibration for PROSPECT

PROSPECT, the Precision Reactor Oscillation and SPECTrum experiment, is a short-baseline reactor antineutrino experiment aiming to probe an eV^2 -scale sterile neutrino oscillation, and to investigate the isotopic origin of discrepancies between measured and predicted reactor antineutrino fluxes and spectra. In PROSPECT, reactor antineutrinos are detected by an optically segmented ^6Li loaded liquid scintillator detector. Since its commissioning in spring 2018, PROSPECT has successfully detected reactor antineutrino on earth surface, made oscillation measurement, and precisely measured antineutrino spectrum from ^{235}U . The segmented nature of the PROSPECT detector and its deployment with little over-burden brought distinct challenges for the energy scale calibration and backgrounds subtraction. This poster describes the PROSPECT detector design, characterization, and calibration in realizing its antineutrino measurement.

Mini-abstract

The poster describes the detector and calibration for the PROSPECT reactorneutrino measurements.

Experiment/Collaboration

PROSPECT collaboration

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