

Searching for Sterile Neutrino Oscillations with the PROSPECT Experiment

PROSPECT is a reactor antineutrino experiment consisting of a segmented liquid scintillator antineutrino detector designed to probe short-baseline neutrino oscillations and precisely measure the antineutrino spectrum of the primary fission isotope U-235. PROSPECT's neutrino oscillation analysis utilizes target segmentation to look for differences in measured inverse beta decay (IBD) positron spectra at different positions in its detector. With a current baseline coverage of between 7 and 9 meters, the analysis will probe sterile neutrino oscillation in the $1\text{-}10\text{-eV}^2$ mass-splitting range, with sensitivity largely independent of the underlying reactor antineutrino flux. This poster will summarize the current status of PROSPECT's oscillation analysis, including discussion of input signal and background datasets, estimation and implementation of absolute and relative systematic uncertainties. Expected future improvements to the IBD dataset and systematics will also be presented.

Authorship annotation

for the PROSPECT Collaboration

Session and Location

Monday Session, Poster Wall #139 (Hölderlin-Room)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)