

Searching for Sterile Neutrino Oscillations with the PROSPECT Experiment

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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 oscillations in the $\sim 1\text{--}10\text{ eV}^2$ mass-splitting range, with sensitivities 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 systematic uncertainties, statistical approaches in the oscillation fit, and most recent oscillation results.

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