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## Updated Event Selection for the PROSPECT Experiment

PROSPECT aims to measure highly enriched  $^{235}\text{U}$  reactor anti-neutrino energy spectrum with high precision and to model-independently search for  $eV^2$  sterile neutrino oscillations. PROSPECT is an optical segmented detector filled with  $\sim 4$  ton  $^6\text{Li}$ -loaded liquid scintillator and deployed at  $\sim 7\text{m}$  from compact reactor core in HFIR(High Flux Isotope Reactor).

In order to detect reactor anti-neutrinos via IBD (Inverse Beta Decay) processes, we developed an analysis framework based on the liquid scintillator PSD (Pulse Shape Discrimination) particle-identification and the temporal-spatial correlations in the IBD processes. Additional cosmogenic veto cuts mitigate high on-surface cosmogenic backgrounds.

Previously we reported  $^{235}\text{U}$  anti-neutrino spectrum and sterile neutrino oscillation result based on  $\sim 30$  days' reactor on data-taking. Here we describe improvements to the IBD event selection applied to a larger data set with approximately twice the IBD statistics.

### Mini-abstract

Improved PROSPECT inverse beta decay event selection applied to 95 days reactor on data.

### Experiment/Collaboration

PROSPECT collaboration

**Primary author:** LU, Xiaobin (Oak Ridge National Laboratory, The University of Tennessee, Knoxville)

**Presenter:** LU, Xiaobin (Oak Ridge National Laboratory, The University of Tennessee, Knoxville)

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