

Latest Reactor Antineutrino Spectrum and Boosted Dark Matter Results from PROSPECT

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PROSPECT is a reactor antineutrino experiment designed to search for short-baseline sterile neutrino oscillations and to perform a precise measurement of the U-235 reactor antineutrino spectrum. The PROSPECT detector collected data at the High Flux Isotope Reactor (HFIR) at the Oak Ridge National Laboratory, with the ~ 4 -ton volume covering a baseline range of 7-9m. To operate in this environment with tight space constraints, limited overburden, and the possibility of reactor-correlated backgrounds, the PROSPECT AD incorporates design features that provide excellent background rejection. These include detector segmentation and the use of Li-6 doped liquid scintillator with high light yield, world-leading energy resolution, and good pulse-shape discrimination properties. This talk will describe the operations of PROSPECT at HFIR and report on the latest results from the antineutrino spectrum measurement of U-235 fissions. Additionally, the limits from searches by PROSPECT for sub-GeV boosted dark matter upscattered by cosmic rays will be reported.

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