

PROSPECT: A Precision Reactor Oscillation and Spectrum Experiment

Tuesday, 9 May 2017 14:35 (15 minutes)

PROSPECT is a reactor antineutrino experiment consisting of a segmented ${}^6\text{Li}$ -loaded liquid scintillator antineutrino detector designed to probe short-baseline neutrino oscillations and precisely measure the reactor antineutrino spectrum. The experiment will be located at the High Flux Isotope Reactor (HFIR) at Oak Ridge National Lab. The three ton detector will be located 7-12 m from the compact, highly enriched uranium HFIR core. Over the past three years, PROSPECT has deployed multiple detectors at HFIR and Yale University to understand the local background environment and to demonstrate active and passive background rejection. Measuring the neutrino spectrum from ${}^{235}\text{U}$ at a range of baselines will give insight to the recent reactor spectrum discrepancies, provide an important benchmark for future reactor experiments, and will probe the eV-scale sterile neutrino best-fit region at 3σ within one year of operation at HFIR. In this talk, we will discuss the design, experimental program, and discovery potential of the experiment.

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Session Classification: Neutrino Properties

Track Classification: Accelerator-Based Neutrinos - Convenor: Jennifer Thomas, University College London