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## **The Development and Characterization of PROSPECT Detectors**

*Monday, August 8, 2016 6:30 PM (2 hours)*

PROSPECT is a phased experiment consisting of segmented  ${}^6\text{Li}$ -loaded liquid scintillator antineutrino detectors 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 Laboratory. The first phase is a movable 3 tonne antineutrino detector located 7-12 m from the compact, highly enriched uranium core.

Over the past three years, PROSPECT has deployed multiple prototype detectors at HFIR to understand the local background environment and demonstrate active and passive background rejection.

The single-segment test detector, PROSPECT-20, verified background simulations and demonstrated the optical performance expected in the full detector.

A two-segment prototype, PROSPECT-50, is under development to demonstrate critical subsystems such as calibration, optical segmentation, light readout.

We present results of the prototype program along with projections for the performance of the PROSPECT detector.

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