

PROSPECT: a short-baseline reactor antineutrino measurement

Tuesday, 5 May 2015 16:30 (15 minutes)

There has been increasing tension between direct reactor antineutrino measurements and models of antineutrino production.

As a result, several collaborations have proposed to make high-resolution measurements of the reactor neutrino spectrum at a short baseline.

One such collaboration is PROSPECT (the Precision Reactor Oscillation SPECTrum measurement).

The goal is two-fold: a precision reactor antineutrino spectrum measurement and a sterile neutrino search.

The detector will be installed near the High Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory.

HFIR uses Highly Enriched Uranium which means a pure U-235 antineutrino spectrum.

An absolute measurement of this spectrum will constrain the current and future reactor models and improve our understanding of the total reactor antineutrino spectrum.

Additionally, the planned detector is sufficiently large to perform a search for sterile neutrinos on the eV scale.

Over the last year, PROSPECT has constructed and installed several prototypes in preparation for the final 2-ton Lithium-doped liquid scintillator detector.

This talk will describe the status of PROSPECT in its various stages and the predicted sensitivity of its measurements.

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Session Classification: Non-Accelerator-Based Neutrino

Track Classification: Non-Accelerator-Based Neutrino Physics