Contribution ID: **33** Type: **Invited talk**

PROSPECT-I final oscillation results and PROSPECT-II physics goals and detector design

Tuesday 29 October 2024 09:30 (30 minutes)

The Precision Reactor Oscillation and SPECTrum (PROSPECT) experiment is a short-baseline reactor experiment built to measure the antineutrino spectrum from the High Flux Isotope Reactor (HFIR). The detector is made of 4 tons of Li-6 doped liquid scintillator divided into an 11x14 array of optically separated segments. The experiment searches for potential short-baseline oscillations and the existence of sterile neutrinos. PROSPECT has already set new limits on the existence of eV-scale sterile neutrinos while achieving the highest signal-to-background ratio on any surface antineutrino detector. The collaboration has developed an upgraded detector design, PROSPECT-II, which will increase the detector's statistics and physics sensitivity. In this talk, I will present the PROSPECT-I results and describe the major design features of the PROSPECT-II detector, highlighting improvements from the PROSPECT-I detector. In addition, I will discuss how those add to the oscillation and spectrum results.

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Session Classification: Invited talks