

Abstract Submitted
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The Design and Expanded Physics Reach of the PROSPECT-II Detector Upgrade¹ CHRISTIAN ROCA CATALA, Lawrence Livermore National Laboratory, PROSPECT COLLABORATION — The Precision Reactor Oscillation and SPECTrum (PROSPECT) experiment is a short-baseline reactor experiment aimed at measuring the spectrum of antineutrinos from the High Flux Isotope Reactor (HFIR) and searching for potential short-baseline oscillations by the existence of sterile neutrinos. With the highest signal-to-background ratio on any surface antineutrino detector, PROSPECT has set new limits on the existence of eV-scale sterile neutrinos while measuring the world’s most precise U-235 antineutrino spectrum. Following completion of its first run, the collaboration has developed an upgraded detector design, called PROSPECT-II, with the goal of improving the experiment’s statistics and sensitivity. PROSPECT-II will provide unique access to oscillation parameter space at high mass splittings and new insight into the causes of discrepancies between reactor antineutrino spectrum predictions and measurements. This talk will describe the design of the PROSPECT-II detector and the physics program it enables.

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