

Abstract Submitted  
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**Background Characterization for PROSPECT: a US Short-baseline Neutrino Oscillation Experiment** THOMAS LANGFORD, Yale University, PROSPECT COLLABORATION — Segmented antineutrino detectors placed near compact research reactors provide an excellent opportunity to probe short-baseline neutrino oscillations and precisely measure the reactor antineutrino spectrum. The PROSPECT collaboration has developed a conceptual design for an experiment covering the favored reactor anomaly parameter space using two detectors located within 4-20 m of an existing reactor. Research reactors offer the benefits of compact cores, distinct reactor-off periods, and single-isotope fuel. However, they are typically located at ground level, providing little to no overburden to shield detectors. This talk will present the background requirements of the PROSPECT experiment and discuss feasibility studies that have been performed for three potential locations: NIST, INL, and ORNL. Two fast neutron detectors, a muon telescope, and HPGE and NaI gamma detectors have been deployed at the sites to measure reactor-related and cosmogenic backgrounds. The results of background measurements at each site during reactor operation and shutdown will be shown. Additionally, the planned techniques to reduce the impact of each background on the physics reach of the full experiment will also be discussed.

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