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Searching for Sterile Neutrinos with the PROSPECT Detector

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PROSPECT, the Precision Reactor Oscillation and Spectrum Experiment, is a phased experiment at the High Flux Isotope Reactor in Oak Ridge National Laboratory. Phase I will consist of a movable 3-ton Li-6 loaded liquid scintillator detector with a baseline coverage from 7 to 12 meters from the reactor core. A larger, second detector during Phase II extends the baseline range to 19 meters. One of the main physics goals of the experiment is to measure electron anti-neutrino disappearance from the highly enriched uranium core in order to search for sterile neutrinos. This poster describes the predicted sensitivity and discovery potential of the experiment to eV-scale sterile neutrinos using a spectrum-based oscillation analysis.

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