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Optical Photon Tracking in GEANT-4 for the PROSPECT-II Detector Upgrade SHASHANK JAYAKUMAR, Drexel Univ, PROSPECT COLLABORATION — The PROSPECT short-baseline reactor experiment is designed to perform a precision measurement of the antineutrino spectrum associated with ^{235}U and probe, to high-significance, sterile neutrino driven oscillations with mass splittings at the eV scale. The PROSPECT detector consists of a single volume of ^6Li -loaded liquid scintillator separated into 154 optically isolated segments, and operates at a distance of 7-11m from the compact High-Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory. An improved version of the detector, PROSPECT-II, is in the design phase. Optical photon tracking in GEANT-4 has been used to model optical properties of the upgrade design and validate important detector performance parameters. This talk will explore the methods used and the results obtained through Monte Carlo simulation and comparison with data.

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