

Abstract Submitted
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PROSPECT: Optical Calibration System KEN TRINH, Drexel Univ, PROSPECT COLLABORATION — The Precision Reactor Oscillation and Spectrum Experiment (PROSPECT), is a short baseline, reactor neutrino experiment which focuses on measurements of the flux and energy spectrum of antineutrinos emitted from the High Flux Isotope Reactor (HFIR) at Oak Ridge National Laboratory. Using these measurements, PROSPECT will probe for eV-scale sterile neutrinos while making a high precision measurement of the U-235 antineutrino spectrum. PROSPECT contains two phases; the first phase consists of a mobile detector near the reactor core while the second phase adds a larger fixed detector further from the core. The PROSPECT Phase 1 detector consists of a ~ 2 ton optically segmented liquid scintillator with each segment read-out by two photomultiplier tubes (PMTs). The PMTs are calibrated with a photon source generated by a nanosecond pulsed laser. In this project, we developed a plan to determine the effectiveness of a 450nm fiber-pigtailed diode laser as it coupled with several modules including an optical fiber splitter, an optical diffuser, and an attenuator. The project tested for the system ability to deliver light uniformly to each of the cells in the detector. We will present the design and result of this project as well as discuss how it will be implemented in PROSPECT.

Ken Trinh
Drexel Univ

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