Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Characterizing the future site for PROSPECT BRENNAN HACKETT, BLAINE HUFFRON, ELISA ROMERO, Oak Ridge National Laboratory and University of Tennessee, JAMES MATTA, Physics Division, Oak Ridge National Laboratory, ALFREDO GALINDO-URIBARRI, Oak Ridge National Laboratory and University of Tennessee — The discovery of neutrino oscillations commenced exploration of a rich field of science at the intersection of nuclear, particle and astrophysics. This brought a number of interesting questions related to the neutrinos to the forefront of scientific literature. PROSPECT, the Precision Reactor Oscillation and Spectrum Experiment, aims to help answer some of those questions by precisely measuring the antineutrino flux and energy spectrum 7-9 meters from the highly enriched ^{235}U reactor core at Oak Ridge National Laboratory's High Flux Isotope Reactor (HFIR) with the goal to probe much of the best fit sterile neutrino parameter space. To better probe the sterile neutrino best fit region it is important to minimize the systematic uncertainties, requiring a detailed characterization of the background radiation field. Here we present DANG (the Detector Array to measure Neutron and Gamma radiation), an array deployed at HFIR to characterize spatial and time variations of the emitted background radiation. The array scans the entire proposed volume of the future PROSPECT location, providing a 3-d map of the background. Additionally, the array allows the study of the time evolution of HFIR correlated background to better understand how the reactor's prompt and activation radiation changes as function of the reactor cycle. Both a discussion of the construction and operation of the array will be given as well as a look at first results.

Brennan Hackett
Oak Ridge National Laboratory and University of Tennessee

Date submitted: 22 Aug 2016 Electronic form version 1.4