

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Sterile Neutrino Search with the PROSPECT Experiment¹

PRANAVA TEJA SURUKUCHI VENKATA, Illinois Inst of Tech — PROSPECT is a multi-phased short-baseline reactor antineutrino experiment with primary goals of performing a search for sterile neutrinos and making a precise measurement of ^{235}U reactor antineutrino spectrum from the High Flux Isotope Reactor at Oak Ridge National Laboratory. PROSPECT will provide a model independent oscillation measurement of electron antineutrinos by performing relative spectral comparison between a wide range of baselines. By covering the baselines of 7-12 m with Phase-I and extending the coverage to 19m with Phase-II, the PROSPECT experiment will be able to address the current eV-scale sterile neutrino oscillation best-fit region within a single year of data-taking and covers a major portion of suggested parameter space within 3 years of Phase-II data-taking. Additionally, with a Phase-II detector PROSPECT will be able to distinguish between 3+1 mixing, 3+N mixing and other non-standard oscillations. In this talk, we describe the PROSPECT oscillation fitting framework and expected detector sensitivity to the oscillations arising from eV-scale sterile neutrinos.

¹DOE

Pranava Teja Surukuchi Venkata
Illinois Inst of Tech

Date submitted: 30 Sep 2016

Electronic form version 1.4