Abstract Submitted
for the APR18 Meeting of
The American Physical Society

Planned Improvements to Sterile Neutrino Searches in the NOvA Far Detector SIJITH EDAYATH, Cochin University of Science and Technology (CUSAT) / Fermilab. — The evidence of neutrino oscillations from the majority of neutrino oscillation experiments are consistent with a three-flavor model, but the existence of additional sterile neutrino flavors is required to explain deviations observed in short-baseline experiments, such as LSND and MiniBooNE, in terms of neutrino oscillations. The NOvA experiment, which uses a long baseline of 810 km between its Near Detector (ND) at Fermilab and Far Detector (FD) in Minnesota, has the potential to search for sterile neutrino mixing by looking for a deficit of neutral-current (NC) neutrino interactions at the FD with respect to the ND prediction. In this talk, I will present the scope of the future planned 2018 NC analysis and will also present the improvements being developed for the NC sterile neutrino search. These analysis improvements include a simultaneous ND-FD shape fit of the NC energy spectrum, allowing NOvA to probe a wider range of sterile neutrino masses than previous analyses.

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Date submitted: 12 Jan 2018 Electronic form version 1.4