Abstract Submitted
for the APR18 Meeting of
The American Physical Society

Short-baseline Sterile Neutrino Searches Using the NOvA Near Detector ADAM AURISANO, Univ of Cincinnati, SIVA KASETTI, University of Hyderabad, RIJEESH KELOTH, Cochin University of Science and Technology, NOVA COLLABORATION — Three-flavor neutrino oscillations have successfully explained a wide range of neutrino oscillation data. However, the excess of events as seen by the LSND and MiniBooNE experiments and the deficit of events seen at the GALLEX and SAGE experiments when exposed to a calibration source can be explained if a new sterile neutrino state with a mass near 1 eV exists. While these results are tantalizing, they are not conclusive, as they are in tension with null results from other experiments. Resolving the issue of the existence of light sterile neutrinos has profound implications for both particle physics and cosmology. The NOvA Near Detector is a 293 ton, almost fully-active, fine-grained liquid-scintillator detector which may be able to clarify this situation by searching for sterile-driven oscillations of neutrinos from the NuMI beam over a baseline of 1 km. I will discuss two short-baseline searches. The first looks for muon-neutrino disappearance and electron-neutrino appearance using neutrinos from the narrow-band beam peaked at 2 GeV. This analysis probes the L/E range where oscillations should occur if the LSND and MiniBooNE anomalies were due to sterile neutrinos. The second looks for tau-neutrino appearance in the secondary, high-energy beam peak due to kaon decays.

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Date submitted: 12 Jan 2018 Electronic form version 1.4