

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Looking for Sterile Neutrinos via Neutral-Current Disappearance with NOvA. SHAOKAI YANG, Univ of Cincinnati, NOVA COLLABORATION — Contradictory evidence has been presented on the issue of neutrino mixing between the three known active neutrinos and light sterile neutrinos. The excess of events as seen by the LSND and MiniBooNE experiments interpreted as short-baseline neutrino oscillations, the collective evidence of the reactor neutrino anomaly, and the gallium anomaly all point towards sterile neutrinos with mass at the 1 eV level. While these results are tantalizing, they are not conclusive as they are in tension with null results from other short-baseline experiments, and with disappearance searches in long-baseline and atmospheric experiments. Resolving the issue of the existence of light sterile neutrinos has profound implications for both particle physics and cosmology. The NOvA (NuMI Off-Axis ν_e Appearance) experiment may help clarify the situation by searching for disappearance of active neutrinos from the NuMI (Neutrinos from the Main Injector) beam over a baseline of 810 km. In this talk, we will describe a method of how NOvA can look for oscillations into sterile neutrinos, with focus on disappearance of neutral current (NC) neutrino events, will present the first analysis result of this search, discuss their implications in constraining the existence of light sterile neutrinos, and the planned updates to this analysis.

Shaokai Yang
Univ of Cincinnati

Date submitted: 29 Sep 2016

Electronic form version 1.4