



Contribution ID: 555

Type: **Poster**

Event Selection for the NOvA Sterile Neutrino Search

The NOvA experiment consists of two functionally identical liquid scintillator detectors in Fermilab's NuMI neutrino beam: a 300 ton near detector at a 1km baseline, and a 14,000 ton far detector 810km away in Ash River, MN. The primary physics goal of NOvA is to characterise neutrino oscillations, with focus on the three-neutrino flavor paradigm. This poster presents an extension to this goal by using the detectors to search for oscillations involving sterile neutrinos. The search is performed by leveraging neutrino disappearance in neutral current interactions between the near and far detectors as well as by performing a joint fit of electron neutrino appearance and muon neutrino disappearance at the Near Detector. Techniques for event selection and our systematics will be presented and discussed.

Mini-abstract

The name of the game in neutrinos is to count events and know how well you count them.

Experiment/Collaboration

NOvA

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Session Classification: Poster session 4