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Search for sterile neutrinos in neutrino data in the NOvA near and far detectors

This poster presents an updated analysis of neutrino data from the NOvA experiment to search for sterile neutrino oscillations. NOvA 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, 14.6 mrad off the beam's central axis. Sterile neutrino oscillations are constrained by searching for neutrino disappearance in neutral current interactions between the near and far detectors. A covariance matrix approach is utilised to cancel systematic uncertainties between the two detectors over a broad range of Δm^2_41 parameter space. This analysis uses neutrino data collected between February 2014 and February 2017, corresponding to an exposure equivalent to 8.85e20 protons on target. Limits on the sterile neutrino mixing parameters θ_24 and θ_34 as a function of Δm^2_41 are presented, along with a full analysis of systematic uncertainties.

Authorship annotation

for the NOvA collaboration

Session and Location

Monday Session, Poster Wall #141 (Hölderlin-Room)

Poster included in proceedings:

yes

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Track Classification: Poster (not participating in poster prize competition)