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First Results from the NOvA Antineutrino Neutral-Current Disappearance Sterile Neutrino Search

Observations of neutrino oscillations from the majority of neutrino oscillation experiments are consistent with a three-flavor framework. However, the excess of events seen by LSND and MiniBooNE are incompatible with this model and can be explained by an additional, sterile, neutrino. These intriguing results are not conclusive and are in tension with findings from other short-baseline and long-baseline experiments.

The NOνA experiment, which uses a long baseline of 809 km between its near and far detectors at Fermilab and Minnesota respectively, has the potential to set world-leading limits on the parameters governing sterile neutrino oscillations by searching for a deficit of neutral current interactions compared to that predicted at the two detectors. The first results from this analysis, when applied to the NOνA antineutrino dataset, will be presented, with plans for future sterile neutrino searches discussed.

Authorship annotation

for the NOvA collaboration

Session and Location

Monday Session, Poster Wall #132 (Hölderlin-Room)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)