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Latest Constraints on Three-Flavor Neutrino Oscillation Parameters from the NOvA Experiment.

NOvA, is a two-detector, long-baseline neutrino oscillation experiment located at Fermilab, Batavia, IL, USA. The NOvA experiment was designed primarily to constrain neutrino oscillation parameters by analyzing $\nu_{\mu}(\bar{\nu}_{\mu})$ disappearance and $\nu_{e}(\bar{\nu}_{e})$ appearance data observed at the far detector. The Neutrinos at Main Injector (NuMI) beamline at Fermilab provides a high purity beam of neutrinos and anti-neutrinos to the experiment. The NOvA experiment consists of two functionally identical, finely granulated liquid tracking calorimeters, both situated 14.6 mrad off-axis to the beam direction. The NOvA near detector, situated 100 meters underground and 1 kilometer from the beam source, detects the non-oscillated $\nu_{\mu}(\bar{\nu}_{\mu})$ and beam $\nu_{e}(\bar{\nu}_{e})$ events. The far detector, located in Ash River, MN, USA, 810 kilometers from the beam source, records the non-oscillated $\nu_{\mu}(\bar{\nu}_{\mu})$ and the oscillated $\nu_{\mu}(\bar{\nu}_{\mu}) \rightarrow \nu_{e}(\bar{\nu}_{e})$ events. The most recent measurements of three flavor neutrino oscillation parameters based on an analysis of the data collected from neutrino-beam exposure of 26.60 × 10²⁰ POT and anti-neutrino beam exposure of 12.50 × 10²⁰ POT including an additional low energy ν_{e} sample, will be presented in this talk.

Field of contribution

Experiment

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