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Latest Results From the NOvA Experiment

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NOvA is a long-baseline beam neutrino experiment. It uses the 700 kW NuMI beam at Fermilab to send muon neutrinos (or muon antineutrinos) to two functionally identical detectors, located 14.6 mrad off the beam axis. The Near Detector (ND) is located at Fermilab, 1 km from the neutrino source and the 14 kton Far Detector (FD) is located 810 km away in Ash River, Minnesota. Both the detectors are tracking calorimeters filled with liquid scintillator which can detect and identify muon and electron neutrino interactions with high efficiency. The physics goals of NOvA are to observe the oscillation of muon neutrinos to electron neutrinos, understand why matter dominates over antimatter in the universe, and to resolve the ordering of neutrino masses. To that end, NOvA measures the electron neutrino and antineutrino appearance rates, as well as the muon neutrino and antineutrino disappearance rates. The ND receives a high statistics neutrino flux due to its close proximity to the neutrino source which makes it suitable for high precision neutrino cross-section measurements and is used as a control for the oscillation analyses. The FD is used to analyze the appearance and disappearance of the neutrinos arriving from Fermilab. In this talk I will give an overview of the NOvA and present the latest results combining both neutrino data (13.6×10^{20} POT) and antineutrino data (12.5×10^{20} POT).

Session

Neutrino Physics

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