

Three-Flavor Neutrino Oscillations at NOvA

Monday, 8 July 2024 11:15 (15 minutes)

NOvA, is a two-detector, long-baseline neutrino oscillation experiment located at Fermilab, Batavia, IL, USA. It is designed primarily to constrain neutrino oscillation parameters such as the atmospheric mass squared splitting, Δm_{32}^2 , the mixing angle, θ_{23} , neutrino mass hierarchy, and the CP-violating phase, δ_{CP} , using ν_μ ($\bar{\nu}_\mu$) disappearance and ν_e ($\bar{\nu}_e$) appearance data. NOvA receives a high purity 900 KW intense beam of neutrinos and anti-neutrinos from Fermilab's Neutrinos at Main Injector (NuMI) beamline. NOvA used functionally identical finely granulated liquid scintillation detectors, both situated 14.6 mrad off-axis to the beam direction. The NOvA near detector observes un-oscillated ν_μ ($\bar{\nu}_\mu$) and beam ν_e ($\bar{\nu}_e$) events, while the far detector, which is situated 809 km away from the near detector, records un-oscillated ν_μ ($\bar{\nu}_\mu$) and oscillated ν_e ($\bar{\nu}_e$) events. We will discuss the neutrino oscillation analysis strategy at NOvA and the latest three-flavor oscillation results from 10 years of NOvA data in this talk.

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Session Classification: NOvA