

Searches for Non-Standard Interactions (NSI) of Neutrinos using the NOvA Experiment

Friday 31 July 2020 13:30 (3 minutes)

The observation of neutrino oscillations by the atmospheric, solar, accelerator, and reactor neutrino experiments substantiate that neutrinos are not massless particles. In 1978, L. Wolfenstein predicted that even massless neutrinos can change their flavor through flavor-changing neutral current (NC) interactions, also called non-standard interactions (NSI). The Standard Model of particle physics suppresses such as flavor-changing NC interactions, resulting in the hypothesis of these non-standard interactions beyond the standard model. Accelerator-based, long-baseline experiments, provide an opportunity for searches of these NSI when considering the oscillations of neutrinos traveling through matter. The NOvA experiment is a long-baseline neutrino oscillation experiment that uses the upgraded NuMI beam from Fermilab to detect both electron appearance and muon disappearance. NOvA employs two functionally identical detectors: a Near Detector, located at Fermilab, and a Far Detector, located at Ash River, Minnesota over an 810 km baseline. The presence of NSI could alter the production, detection, and propagation of neutrinos, and can arise as an effect on measurements of neutrino oscillation parameters. In this poster, I will present the current status of searches for NSI via neutrino oscillations by the NOvA experiment.

Secondary track (number)

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Session Classification: Neutrino Physics - Posters

Track Classification: 02. Neutrino Physics