

Constraining Systematics for Future Sterile Neutrino Analysis at NOvA Experiment

Equipped with detectors at both Fermilab in Illinois and Ash River in Minnesota, the NOvA experiment is designed to explore the complex properties of neutrinos, with a primary focus on the active three-flavor neutrino mixing phenomena. The experiment consists of two identical detectors: the Near Detector, situated 1 km underground at Fermilab, and the Far Detector, located 810 km away and 14 mrad off the beam axis in northern Minnesota. NOvA uses this significant distance to examine neutrino behaviour thoroughly.

Beyond investigating active neutrino mixing, NOvA also explores exotic oscillations, such as those involving sterile neutrinos. However, uncertainties in neutrino flux, cross-section, and detector systematics present significant challenges, making distinguishing genuine physics events from background noise difficult. This poster will discuss the approach to reduce the cross-section and flux systematics for the upcoming sterile neutrino analysis.

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