

Systematic Uncertainties in the NOvA ν_μ -Disappearance Analysis

As the NOvA long-baseline neutrino oscillation experiment takes more data, systematic uncertainty begins to more heavily impact the oscillation analyses. The largest effects are calibration on calorimetric energy, detector modeling on muon energy scale, and near-detector pileup on normalization of the far-detector expectation. Cross-section systematics will be discussed in another poster. Detailed studies have justified previous systematics as too conservative and suggested smaller values. Focused study of detector modeling using dE/dx and external measurements constrain the calibration and energy scale uncertainties. A novel technique is used to assess the impact of activity from neutrino activity piling up over signal, where a simulated neutrino is overlaid into both data and simulation. The difference in efficiency of selecting that single neutrino among data and simulated spills then dominates the normalization systematic.

Authorship annotation

For the NOvA Collaboration

Session and Location

Wednesday Session, Poster Wall #88 (Auditorium Gallery Left)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)