Contribution ID: **275** Type: **not specified**

Predicting the Far Detector Event Rate in the NOvA Electron Neutrino Appearance Channel

Friday 7 August 2015 17:30 (18 minutes)

The NOvA experiment is a long-baseline, two detector experiment designed to study the electron neutrino appearance channel. In this talk, we discuss how we use our Near Detector data to predict signal and background rates at the Far Detector after NOvA's first year of data taking. To determine our background, the neutrino interactions that pass the electron neutrino selection must be broken down by neutrino interaction type, as each type oscillates differently while traveling to the Far Detector. In the simplest approach, we use the Near Detector data as an overall normalization correction to the Monte Carlo expectation for each of the sample components. Two other techniques, one based on hadronic shower comparisons and another based on Michel electron tagging, are still under development and provide valuable cross checks. Our signal prediction is based on muon neutrino charged current interactions selected in the Near Detector, after an efficiency and cross section correction. We then discuss how the component-by-component Near Detector observations are translated into predictions in this data-driven framework.

Oral or Poster Presentation

Oral

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Session Classification: Neutrino Physics

Track Classification: Neutrino Experiment