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Data-Driven Wrong-Sign Background Estimates of the NuMI Beam using the NOvA Near Detector

NOvA is a long-baseline neutrino experiment with two functionally identical liquid scintillator detectors 809 km apart,14.6 mrad off-axis from the NuMI beam. The primary physics goals of this experiment are to probe the matter hierarchy and elements of the PMNS mixing matrix, including CP violation and the atmospheric mixing parameters . To measure these parameters precisely we need to have an accurate estimate of the neutrino and antineutrino composition in our beam. There are two modes of beam operation: Forward Horn Current (FHC) , neutrino dominant mode and Reverse Horn Current (RHC) , antineutrino dominant mode. The RHC beam has comparatively higher contamination from neutrinos. In NOvA we use several techniques to identify neutrinos and antineutrinos and employ various data-driven methods to estimate this contamination. A summary of our approaches to determine wrong sign contamination in RHC will be presented

Mini-abstract

Wrong sign Background estimate of NuMI Beam in NOvA near detector

Experiment/Collaboration

NOvA

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