

Neutrino Beam at NOvA

The NOvA experiment is a next generation long-baseline, accelerator-based neutrino oscillation experiment, currently under construction at Fermilab and northern Minnesota. NOvA will improve the existing constraints on electron neutrino appearance by more than an order of magnitude by comparing electron neutrino rates observed by two totally active liquid scintillator detectors, located 14 mrad off the NuMI neutrino beam axis, on an 810 km long baseline. NOvA can establish the neutrino mass hierarchy and will pioneer searches for CP violation in the leptonic sector. To achieve this goal, the NuMI facility is being upgraded to 700 kW of beam power in neutrino and anti-neutrino modes.

In this poster, we describe the NuMI facility and show the exposure expected at the NOvA detectors in early running. The full beam modelling chain using Monte Carlo generators is outlined. Finally, we discuss the plans to validate the simulation using current and future data from dedicated hadron production experiments.

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