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The MINOS and NOvA Experiments

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Massive neutrinos provide the first hints at physics beyond the standard model. Current and future neutrino experiments aim to further refine our understanding of neutrino mixing, one of the implications of neutrino mass. Two of these experiments, MINOS and NOvA, are long-baseline neutrino oscillation experiments in the Fermilab NuMI neutrino beam line. Both the currently running MINOS experiment, and the future NOvA experiment, employ two detectors, hundreds of km apart. Comparisons of the energy spectra and beam composition at the two sites yield precision measurements of neutrino oscillations for $L/E \sim 500$ km/GeV. In this talk, I will describe the two experiments, presenting updated measurements from MINOS on the probability of muon-neutrino and antineutrino disappearance as a function of energy. I will report on the MINOS measurement of neutral current interaction rates in each detector, which enables a search for light neutrino families that do not couple via the weak interaction, and I will also discuss the latest results from the search for electron-neutrino events in the MINOS Far Detector, which probes the value of the mixing angle θ_{13} . Finally, I will discuss the goals and status of the NOvA experiment.