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Recent Results and Prospects from MINOS

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The MINOS experiment (Main Injector Neutrino Oscillation Search) uses two detectors separated from 735 km to measure the oscillation parameters of the beam of muon neutrinos produced by the NuMI facility. Neutrino oscillations are observed by comparing the observed energy spectrum at the Far Detector, in Northern Minnesota, with the expectation extrapolated from the measured spectrum at the Near Detector at Fermilab. This talk will describe three results. First, the observation of muon neutrino disappearance that gives the best measurement of Δm_{23}^2 to date. Secondly, the result from the 7% component of muon antineutrinos in the beam that allows us to study, for the first time in a long-baseline accelerator experiment, antineutrino oscillations and set a limit on their oscillation parameters. Finally, the search for electron neutrino appearance that sets a limit on the mixing angle $\sin^2(2\theta_{13})$.

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Classification de thématique: Experiment