DNP10-2010-020009

Abstract for an Invited Paper
for the DNP10 Meeting of
the American Physical Society

MiniBooNE Antineutrino Oscillation Results and Implications for the Future

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The MiniBooNE experiment at Fermilab reports results from a search for $\bar{\nu}_\mu \to \bar{\nu}_e$ oscillations, using a data sample corresponding to 5.66×10^{20} protons on target. An excess of events is observed which, when constrained by the observed $\bar{\nu}_\mu$ events, has a probability for consistency with the background-only hypothesis of 0.5% in the oscillation-sensitive energy range of $475 < E_\nu^{QE} < 1250$ MeV. The data are consistent with $\bar{\nu}_\mu \to \bar{\nu}_e$ oscillations in the 0.1 to 1.0 eV^2 Δm^2 range and with the evidence for antineutrino oscillations from the Liquid Scintillator Neutrino Detector at Los Alamos National Laboratory. Implications of this result and future follow-on experiments will be discussed.