Abstract Submitted
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Long Baseline Neutrino Experiment Sensitivity Studies ANNE NORRICK, Los Alamos National Lab, LBNE COLLABORATION — The Long Baseline Neutrino Experiment (LBNE) will address the neutrino mass hierarchy, leptonic CP violation, and the value of the mixing angle Theta13 with unprecedented sensitivity. Protons from the Fermilab Main Injector will impinge on a target to create intense fluxes of charged pions and other mesons. The mesons will be guided down a 250m length of pipe where they will decay creating a muon neutrino beam. The beam will pass through a near detector and travel on to massive detectors located in the Deep Underground Science and Engineering Lab (DUSEL) in Western South Dakota. The near detector at Fermilab will measure the absolute flux of neutrinos before oscillation, and measure signal and background processes in the poorly understood GeV neutrino energy range. To quantify the potential sensitivity of this experiment and the specific needs of the near detector, simulation work has been undertaken. In particular, results of studies using a more sophisticated understanding of various background processes will be presented. Additionally, hardware work for a possible near detector design will be presented.

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