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Electron neutrino cross-section on carbon using the T2K near detector

Current and future long-baseline oscillation experiments have the potential to determine how much the lepton sector violates CP symmetry by studying nu_e appearance in a nu_\mu beam. Intrinsic nu_e from the beam are the largest background for these measurements, and nu_e from oscillations are the signal. Differences between the nu_e and nu_\mu cross-sections are theoretically predicted, but have not yet been measured. Constraining these differences is critical to reducing systematic uncertainties in the hunt for CP violation. This poster presents the first measurement of the nu_e CC cross-section on carbon for GeV-scale neutrinos, using ND280, the T2K near detector. Differential cross-sections in electron momentum, electron angle and Q^2 are presented, along with the total flux-averaged cross-section.

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