

CU Physics Department Particle Seminar

Wednesday, October 20, 2010 705 Pupin Hall 1:00 PM

Electroweak Nuclear Response in Quasielastic Regime

The availability of the double-differential charged-current neutrino cross section, measured by the MiniBooNE collaboration using a carbon target, allows for a systematic comparison of nuclear effects in quasi-elastic electron and neutrino scattering. The results of a study, based on the impulse approximation scheme and a state-of-the-art model of the nuclear spectral functions, suggest that the electron cross section and the flux averaged neutrino cross sections, corresponding to the same target and comparable kinematical conditions, cannot be described within the same theoretical approach using the value of the nucleon axial mass obtained from deuterium measurements. I will discuss the assumptions underlying the analysis of electron scattering data, and argue that the description of neutrino data will require the development of a new paradigm, suitable for application to processes in which the lepton kinematics is not fully determined.

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