

Neutrino Quasielastic Scattering on Nuclear Targets: Parametrizing Transverse Enhancement (Meson Exchange Currents)

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We present a parametrization of the observed enhancement in the transverse electron quasielastic (QE) response function for nucleons bound in carbon as a function of the square of the four momentum transfer (Q^2) in terms of a correction to the magnetic form factors of bound nucleons. The parametrization should also be applicable to the transverse cross section in neutrino scattering. If the transverse enhancement originates from meson exchange currents (MEC), then it is theoretically expected that any enhancement in the longitudinal or axial contributions is small. We present the predictions of the "Transverse Enhancement" model (which is based on electron scattering data only) for the ν_μ , $\bar{\nu}_\mu$ differential and total QE cross sections for nucleons bound in carbon. The Q^2 dependence of the transverse enhancement is observed to resolve much of the long standing discrepancy in the QE total cross sections and differential distributions between low energy and high energy neutrino experiments on nuclear targets.

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