

SUPERSCALING ANALYSES OF INCLUSIVE ELECTRON SCATTERING AND THEIR EXTENSION TO CHARGE-CHANGING NEUTRINO CROSS SECTIONS IN NUCLEI

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ABSTRACT

Superscaling analyses of inclusive electron scattering from nuclei are extended from the quasielastic processes to the delta-excitation region. The calculations of both quasielastic and delta longitudinal and transverse response functions as well as of (e,e') cross sections for ^{12}C at various incident electron energies are performed in approaches going beyond the mean-field approximation, such as the coherent density fluctuation model and that one based on the light-front dynamics method. The obtained scaling functions are used to predict charge-changing neutrino-nucleus cross sections. The analysis makes it possible to gain information about the nucleon correlation effects on both basic quantities of the nuclear ground state, the local density and the nucleon momentum distributions.