

# Superscaling Analysis of Inclusive Electron and Neutrino (Antineutrino) Scattering within the Coherent Density Fluctuation Model

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The experimental data from quasielastic electron and (anti)neutrino scattering on  $^{12}\text{C}$  are reanalyzed in terms of a new scaling variable  $\psi^*$  suggested by the interacting relativistic Fermi gas model with scalar and vector interactions, which is known to generate a relativistic effective mass for the interacting nucleons. We construct a new scaling function  $f^{\text{QE}}(\psi^*)$  for the inclusive lepton scattering from nuclei within the coherent density fluctuation model (CDFM). The latter is a natural extension of the relativistic Fermi gas (RFG) model to finite nuclei. In this work, on the basis of the scaling function obtained within CDFM with a relativistic effective mass  $m_N^* = 0.8m_N$ , we calculate and compare the theoretical predictions with a large set of experimental data for inclusive ( $e, e'$ ) and (anti)neutrino cross sections. The model also includes the contribution of weak two-body currents in the two-particle two-hole sector, evaluated within a fully RFG. Good agreement with experimental data is found over the whole range of electron and (anti)neutrino energies.