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# Global Extraction of the H, D, C-12, Ca-40, and Fe-56 Nuclear Electromagnetic Response Functions and Comparisons to Nuclear Theory and Neutrino/Electron Monte Carlo Generators

We report on a global extraction of the Hydrogen, Deuterium, C-12, Ca-40 and Fe-56 longitudinal (RL) and transverse (RT) nuclear electromagnetic response functions from an analysis of all available electron scattering data on these nuclei. Since the extracted response functions cover a large kinematic range they can be readily used for comparison to theoretical predictions as well as validation and tuning Monte Carlo (MC) generators for electron and neutrino scattering experiments. We present comparisons to several theoretical approaches and electron/neutrino MC generators (run in electron scattering mode) including: "Green's Function Monte Carlo"(GFMC), "Energy Dependent-Relativistic Mean Field"(ED-RMF), "Short Time Approximation Quantum Monte Carlo"(STA-QMC), "Correlated Fermi Gas"(CFG), the NuWro theoretical framework, the ACHILESS theoretical framework, and the Improved Superscaling Model (SuSAv2).

## Secondary track

T05 - QCD and Hadronic Physics

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