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A no-potential approach to nucleon final-state interaction in inclusive electron-nucleus quasielastic scattering L.C. LIU, Los Alamos National Laboratory, T-2 — The nucleon-nucleus final-state interaction (FSI) has been customarily calculated through the use of a nucleon-nucleus potential, either relativistic or nonrelativistic. When the nucleon scattering wave function generated by the potential in the final state is not orthogonal to the nucleon bound-state wave function in the initial state, calculations will overestimate cross sections at small momentum transfers. More generally, the orthogonality is lost whenever theoretical description is restricted to a model space that includes only a limited number of open channels in an inclusive reaction. Using the unitarity equation satisfied by the nucleon scattering wave functions, a theory [1] has been developed to express the FSI contributions in terms of experimentally measured nuclear form factors, avoiding completely the use of any potential and, therefore, the associated potential-model dependence of the calculation. The calculated longitudinal response function for ^{12}C(e,e')X reaction at q=300 MeV/c will be shown as an example of the application of the new approach.

Ref.[1]: Lon-chang (L.C.) Liu, "Pauli blocking and final-state interaction in electron-nucleus quasielastic scattering," to be published in Physical Review C.

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