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Recent developments in electron scattering with quantum Monte Carlo methods

Content

Electrons provide an ideal probe of nuclear properties, as they minimally perturb the structure of the nucleus. Studies of this process over a wide range of kinematics complement on-going efforts using nuclear reactions and rare isotope beam facilities to measure quantities related to the structure of the nucleus. For instance, low-energy elastic longitudinal and magnetic scattering can give insight into collective features of the system and its single particle structure, respectively, while quasi-elastic scattering can illuminate the nature of correlations in the system. In this talk, I will focus on quantum Monte Carlo (QMC) approaches to study these processes. These stochastic techniques to solve the many-body Schrodinger equation allow one to retain the full complexity of the nuclear Hamiltonian, and to study in detail how two-nucleon processes contribute to observable quantities.

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