Abstract Submitted
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Building Real-Space, Imaginary-Time Propagators for Non-Local Nucleon-Nucleon Potentials[1] JOEL LYNN, Arizona State University — Monte Carlo methods often used in nuclear physics, such as auxiliary field diffusion Monte Carlo and Green's function Monte Carlo, have used phenomenological local real-space potentials containing as few derivatives as possible, such as the Argonne-Urbana family of interactions, to make sampling simple and efficient. Basis set methods such as no-core shell model or coupled-cluster techniques typically use softer non-local potentials because of their more rapid convergence with basis set size. These non-local potentials are typically defined in momentum space and are often based on effective field theory. Comparisons of the results of the two types of methods can be difficult when different potentials are used. I will show methods for evaluating the real-space, imaginary-time propagators needed to perform quantum Monte Carlo calculations using such non-local potentials. I will compare the consistency of the large imaginary-time propagators for different potentials and discuss their use in quantum Monte Carlo calculations.

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