Abstract Submitted
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Diagrammatic Monte Carlo[1] KRIS VAN HOUCKE, FELIX WERNER, UMASS Amherst, EVGENY KOZIK, ETH Zurich, LODE POLLET, NIKOLAY PROKOF'EV, BORIS SVISTUNOV, UMASS Amherst, DARPA OLE COLLABORATION — Diagrammatic Monte Carlo (DiagMC) is an exact technique that allows one to simulate quantities specified in terms of diagrammatic expansions, the latter being a standard tool of many-body quantum statistics. The sign problem, that is typically fatal to Monte Carlo approaches, appears to be manageable with DiagMC. We introduce a general DiagMC scheme for strongly interacting fermions. As an illustrative example, we discuss the application of DiagMC to the Fermi-Hubbard model, and benchmark the technique against state-of-the-art numerical tools for strongly correlated fermions. In addition, we discuss the thermodynamic properties of a Fermi gas at unitarity, obtained through DiagMC simulation.

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