

Quantum computing algorithms for the investigation of the thermodynamic properties of physical systems

Tuesday, 20 December 2022 17:35 (20 minutes)

Quantum computing is a promising approach to avoid the sign problem that hinders the numerical simulation of many interesting physical systems. Here we report some progress on the application of quantum computing algorithms to the study of the thermodynamics for the one-dimensional Hubbard model, which can be regarded as a prototype for more complex theories having non-trivial fermionic degrees of freedom. We also explore the effectiveness of different quantum error mitigation strategies for simulating the real time evolution on IBM quantum computers.

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Session Classification: Session 8