

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Tensor Network Monte Carlo for Quantum Lattice Models

WILLIAM HUGGINS, University of California, Berkeley, EDWIN SToudenMIRE, University of California, Irvine, NORMAN TUBMAN, DANIEL FREEMAN, BIRGITTA WHALEY, University of California, Berkeley — Tensor networks can accurately and efficiently encode the ground states and thermal density matrices of local quantum lattice Hamiltonians. However, extracting expectation values from these representations is known to require the use of approximation schemes; in this work we combine recently developed Monte Carlo techniques for tensor networks with more standard Renormalization Group approaches. We present preliminary results and discuss the current status of our efforts to generalize these methods.

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Date submitted: 11 Nov 2016

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