

Abstract Submitted
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Monte Carlo methods in continuous time for lattice Hamiltonians

EMILIE HUFFMAN, SHAILESH CHANDRASEKHARAN, Duke University — We show that solutions to fermion sign problems in the CT-INT formulation can be extended to systems involving fermions interacting with dynamical quantum spins. While these sign problems seem unsolvable in the auxiliary field approach, solutions emerge in the worldline representation of quantum spins. Combining the idea with meron-cluster methods, we are able to extend the solvable models even further. We demonstrate these novel solutions to sign problems by considering several examples of strongly correlated systems.

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