

Adiabatic preparation of a Heisenberg antiferromagnet using an optical superlattice

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We analyze the possibility to prepare a Heisenberg antiferromagnet with cold fermions in optical lattices, starting from a band insulator and adiabatically changing the lattice potential. The numerical simulation of the dynamics in 1D allows us to identify the conditions for success, and to study the influence that the presence of holes in the initial state may have on the protocol. We also extend our results to two-dimensional systems.

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