

Abstract Submitted  
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**Adiabatic Preparation of Many-Body States in Optical Lattices** MICHAEL GULLANS, Harvard University, MARK RUDNER, ANDERS SØRENSEN, EHUD ALTMAN, J.V. PORTO, EUGENE DEMLER, MIKHAIL LUKIN — We analyze a technique for the preparation of low entropy many body states of atoms in optical lattices based on adiabatic passage. In particular, we show that this method allows preparation of strongly correlated states as stable highest energy states of Hamiltonians that have trivial ground states. As an example, we analyze the generation of antiferromagnetically ordered states by adiabatic change of a staggered field acting on the spins of bosonic atoms with ferromagnetic interactions.

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