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Stroboscopic Generation of Topological Protection C. M. HERDMAN, KEVIN C. YOUNG, University of California, Berkeley, V. W. SCAROLA, Virginia Tech, MOHAN SAROVAR, K. B. WHALEY, University of California, Berkeley — Trapped neutral atoms offer a powerful route to robust simulation of complex quantum systems. We present here a stroboscopic scheme for realization of a Hamiltonian with n -body interactions on a set of neutral atoms trapped in an addressable optical lattice, using only 1- and 2-body physical operations together with a dissipative mechanism that allows thermalization to finite temperature or cooling to the ground state. We demonstrate this scheme with application to the toric code Hamiltonian, ground states of which can be used to robustly store quantum information when coupled to a low temperature reservoir.

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