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Driven-dissipative creation of a topologically ordered state (AKLT State) VAIBHAV SHARMA, Cornell University — Dissipation in an open quantum system often destroys a quantum state of interest, but if carefully engineered, it can be used as a tool to prepare interesting quantum states. We propose an experimentally viable method to dissipatively create the AKLT (Affleck-Lieb-Kennedy-Tasaki) state which exhibits symmetry protected topological order and harbours gapped edge modes. We analyze a system of bosons trapped in a tilted optical lattice, driven by coherent Raman beams and coupled to a superfluid bath. We propose a protocol under which the AKLT state emerges as the steady state. We use exact diagonalization and DMRG methods to calculate the time scale for state preparation and find that the state preparation time scales quadratically with the system size.

Vaibhav Sharma
Cornell University

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