

Abstract Submitted
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Pomeranchuk Cooling in Frustrated Magnets – a Route to Spin Liquids in Cold Atoms DAVID MROSS, Massachusetts Institute of Technology — Fermions hopping on a two-dimensional triangular lattice at half filling with moderate repulsive interactions are expected to form an exotic Mott insulating state. This Mott insulator, also known as a quantum spin liquid (QSL), does not order magnetically, nor break any other symmetry. It hosts many gapless excitations which give rise to a parametrically larger low-temperature entropy than in magnetically ordered states. We show that adiabatically tuning the strength of the interaction from the metallic into the QSL state leads to a significant reduction in temperature. This makes such a system a good candidate for accessing novel quantum phases in cold atom experiments.

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