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Synthetic gauge fields can stabilize exotic phases in alkaline earth atoms KADEN HAZZARD, JILA, NIST, CU-Boulder, GANG CHEN, University of Toronto, MICHAEL HERMELE, CU-Boulder, ANA MARIA REY, JILA, NIST, CU-Boulder — Alkaline earth atoms in an optical lattice have been predicted to harbor exotic topological quantum phases of matter, for example a chiral spin liquid, at very low temperatures, due to their large nuclear spin $I \leq 9/2$, and high symmetry, $\mathrm{SU}(N = 2I + 1)$. We have previously shown that strong correlations and quantum magnetism can persist to surprisingly high temperatures in these systems, due to the enhanced symmetry. Here we show that the application of an artificial gauge field can greatly expand the parameter regime where these exotic phases occur, pushing them one step closer to experimental reality.

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