

Abstract Submitted
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Prospects for generating large synthetic gauge fields in dysprosium quantum gases NATHANIEL BURDICK, KRISTIAN BAUMANN, MINGWU LU, YIJUN TANG, Stanford University, HUI ZHAI, Tsinghua University, TIN-LUN HO, Tsinghua University, Ohio State University, ZIAOLING CUI, Tsinghua University, BIAO LIAN, Tsinghua University, Stanford University, BENJAMIN LEV, Stanford University — Highly magnetic atoms such as dysprosium offer large, possibly non-perturbative, dipolar interactions concomitant with extraordinarily large $SU(2)$ spinors and novel atomic structure. Such properties are promising additions to the toolbox of quantum gas-based many-body physics. We will discuss a recent theory proposal [1] that points to exciting prospects for generating strong synthetic gauge fields in such gases, as well as for observing novel many-body states arising from spin-orbit coupling. We will report on experimental progress toward generating these fields in dysprosium.

Nathaniel Burdick
Stanford University

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