

Abstract Submitted
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A quantum gas microscope for highly dipolar atoms SUSANNAH DICKERSON, ANNE HEBERT, AARON KRAHN, GREGORY PHELPS, MARKUS GREINER, Harvard University — Highly dipolar atoms present an exciting opportunity to extend previous quantum gas microscope (QGM) experiments to more complex systems influenced by long range, anisotropic interactions. Erbium, with its large dipole moment, numerous isotopes, and rich Feshbach spectrum, is an excellent element for such research. We present on current progress toward the construction of a QGM for ultracold erbium atoms in an optical lattice. We discuss technical features including the novel reflective imaging system and the optical lattice expandable in all three dimensions. We also discuss proposed avenues for research including studies of magnetism, the Einstein-de Haas effect, and quantum phase transitions with fractional filling factors.

Susannah Dickerson
Harvard University

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