Abstract Submitted
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Fermi Gas Microscopy of Potassium FUDONG WANG, RHYS ANDERSON, PEIHANG XU, VIJIN VENU, GRAHAM J. A. EDGE, STEFAN TROTZKY, JOSEPH H. THYWISSEN, Department of Physics, University of Toronto — Quantum gas microscopes offer a unique and direct view on strongly correlated atoms in optical lattices. Optical imaging with single-site resolution is a local probe, when the system size is large, and especially when motional states of atoms are restricted to the lowest band of the lattice. We present the current performance of our Fermi gas microscope imaging ^{40}K atoms trapped in an optical lattice through a 200-micron-thick sapphire window. In-situ fluorescence imaging relies on continuous laser cooling to pin atoms to a single site during imaging. We have extended our original approach of electromagnetically-induced-transparency (EIT) cooling by combining it with simultaneous Raman sideband cooling (RSC). This method shows an improved performance over a "pure EIT cooling scheme. We describe the principle behind this method, show new images, and discuss measurements in progress.

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