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A Quantum Gas Microscope for Fermionic Potassium LAWRENCE CHEUK, MATTHEW NICHOLS, MELIH OKAN, KATHERINE LAWRENCE, HAO ZHANG, MARTIN ZWIERLEIN, Massachusetts Institute of Technology — Ultracold atoms in optical lattices have enabled experimental studies of quantum many-body physics in Hubbard-type lattice systems in a clean and well-controlled environment. In particular, the advent of quantum gas microscopes has made available new experimental probes ideally suited for observing magnetic order and spatial correlations. In the past year, several groups, including ours, first realized quantum gas microscopes for fermionic atoms. In this talk, we describe our experimental setup, which combines high-resolution imaging with Raman sideband cooling to achieve single-site-resolved fluorescent imaging of fermionic ^{40}K atoms. We also report on recent progress towards observing quantum phases of the Fermi-Hubbard model with single-site resolution.

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