

Abstract Submitted  
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**Towards quantum gas microscopy of fermions in p-bands** JIN YANG, LIYU LIU, JIRAYU MONGKOLKIATTICHAI, JAE WOO KIM, DAVIS GARWOOD, GRACE MINESINGER, PETER SCHAUSS, Univ of Virginia — Quantum gas microscopy is a novel technique which can realize single-site and single-atom resolved detection of strongly correlated quantum gas in optical lattices. We report our recent progress on constructing a quantum gas microscope enabling the imaging of Lithium 6 in p-bands. In addition to the ground band, higher bands are an essential ingredient in Hubbard models for real materials leading to important new effects like orbital ordering which are not well studied up to now. Exotic quantum phases arise by competition between orbital ordering and spin-ordering. Here, we present our latest progress towards the preparation of a two-dimensional Fermi gas and discuss our approach to implementing a two-dimensional optical lattice and loading the atoms into this lattice.

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