

Abstract Submitted
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Prospects for site-resolved imaging of ultracold fermions in optical lattices FLORIAN HUBER, WIDAGDO SETIAWAN, KATHERINE WOOLEY-BROWN, DYLAN COTTA, MARKUS GREINER, Harvard University — Ultracold quantum gases in optical lattices are a perfect toy model to simulate condensed matter Hamiltonians. Recent success in imaging bosonic alkali atoms in-situ has enabled many new possibilities of studying such systems.^{1,2,3} By using fermionic species instead, a different class of Hamiltonians could be implemented, which are believed to exhibit new physics like d-wave superfluidity. We discuss the physical and technical challenges associated with the site-resolved imaging of fermionic alkali species, as well as our approach to detect single Lithium atoms using resonant two-photon ionization (UV+NIR)

¹Gericke *et al.*, *Nature Physics* **4**, 949 (2008)

²Bakr *et al.*, *Nature* **462**, 74 (2009)

³Sherson *et al.*, *Nature* **467**,68 (2010)

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