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Preparing low-entropy Fermi-Hubbard systems with direct laser cooling THOMAS LOMPE, PHILLIP WIEBURG, CHRISTIAN DARSOW-FROMM, LENNART SOBIREY, HENNING MORITZ, Universität Hamburg —
In recent years, few-particle systems of ultracold atoms have emerged as a viable tool for exploring strongly correlated quantum systems [1]. They allow to pursue a bottom-up approach by deterministically preparing small ground-state quantum systems and then using them as building blocks for assembling larger systems. Here we present a new experiment aimed at using Raman sideband cooling of ^{40}K atoms in optical tweezers to prepare few-site Fermi-Hubbard systems with sub-second cycle times and probe them with single-site resolution [2].

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[2] L. W. Cheuk, M. A. Nichols, M. Okan, T. Gersdorf, V. V. Ramasesh, W. S. Bakr, T. Lompe, and M. W. Zwierlein, Quantum-Gas Microscope for Fermionic Atoms, Phys. Rev. Lett. **114**, 193001 (2015)

Thomas Lompe
Universität Hamburg

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