

Abstract Submitted
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Progress Towards a Quantum Gas Microscope¹ JONATHON GILLEN, PETER UNTERWADITZER, EDWARD SU, AMY PENG, HANNES BRACHMANN, WASEEM BAKR, MARKUS GREINER, Harvard University — We will present the latest progress towards a quantum gas microscope to experimentally realize and study complex many-body quantum systems in an optical lattice of Rb87. We are developing a novel approach in which a 2D quantum gas is stored in an evanescent-wave optical surface trap. This proximity of the 2D quantum gas to an optical surface is what allows for microscopy to be used effectively for addressing of individual lattice sites. Studies of this optical system show that sub-micron resolution and single lattice site addressability can be achieved. These experiments should allow us to realize novel, strongly correlated quantum states and to study them with unprecedented control.

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