

Abstract Submitted
for the DAMOP20 Meeting of
The American Physical Society

A Ground State of Strongly Interacting Bosons on an Optical Lattice with an Artificial Gauge Field SOOSHIN KIM, JULIAN LONARD, ROBERT SCHITTKO, JOYCE KWAN, MARKUS GREINER, Harvard University — We study strongly interacting atoms in an artificial gauge field. We realize the ground state of a Harper-Hofstadter system with ultracold ^{87}Rb atoms on an optical lattice by superimposing a running lattice of two Raman beams and adding a magnetic field gradient. With the single-site resolution provided by our quantum gas microscope, we have access to atom number distributions and high-order correlation functions. Our study presents a further step towards optical-lattice experiments investigating topological phases and fractional quantum hall systems.

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Date submitted: 17 Jan 2020

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