A Ground State of Strongly Interacting Bosons on an Optical Lattice with an Artificial Gauge Field

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— We study strongly interacting atoms in an artificial gauge field. We realize the ground state of a Harper-Hofstadter system with ultracold $^{87}\text{Rb}$ 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.