

Abstract Submitted
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Creation of Arbitrary Optical Potentials for an Atomic Quantum Gas ERIC L. HAZLETT, LI-CHUNG HA, LOGAN W. CLARK, University of Chicago, ULRICH EISMANN, University of Chicago, ENS Paris, CHENG CHIN, University of Chicago — Recent progress in high-resolution imaging has proved to be a powerful tool for extracting information about quantum gases. We report our extension of this concept to the ability to imprint arbitrary potentials onto our 2D gas with a resolution of $1\ \mu\text{m}$. By using photolithography we can create arbitrary potentials onto the atoms allowing for exotic lattices and special geometric confinements. In particular we can shape our overall trapping potential to eliminate the curvature caused by the conventional dipole traps. Our current progress and future directions will be discussed.

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