

Abstract Submitted
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Ring and ring lattice trapping potentials for quantum many-body experiments with lithium DANIEL ALLMAN, YANPING CAI, KEVIN WRIGHT, Dartmouth College — Multiply-connected geometries (e.g. rings) provide a natural setting for studying transport properties of unusual quantum phases of matter. Precisely-constructed optical traps can provide such a setting to study novel collective behavior in 1D periodic geometries. We have designed and tested an integrated optical system for creating stable and well-structured ring traps and ring lattices for use at multiple laser wavelengths. The system uses amplitude masks, phase imprinting techniques, and the adjustment of aperture stops to control the shape of the projected optical trapping potentials.

Daniel Allman
Dartmouth Coll

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