

Abstract Submitted
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Magneto-optical trapping of Rb using planar optics WILLIAM MCGEHEE¹, DANIEL BARKER², WENQI ZHU³, NIKOLAI KLIMOV, AMIT AGRAWAL, STEPHEN ECKEL, VLADIMIR AKSYUK, JABEZ MCCLELLAND, National Institute of Standards and Technology — Development of compact devices utilizing laser-cooled atoms is limited by the large physical footprint traditionally required to shape and polarize optical fields using bulk optical elements. Planar optics including photonic integrated circuits, optical metasurfaces, and other diffractive optics offer an alternative path for preparing these optical fields using lithographically produced components. Here, we demonstrate laser cooling of Rb in a grating-type magneto-optical trap using planar optics for beam launching, shaping, and polarization control. Efficient use of light is accomplished using a flat-top laser beam to illuminate the diffraction grating, and the performance is compared to conventional grating MOTs.

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