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Engineered Light Fields Designed to Manipulate Cold Atoms¹ MATTHEW PASIENSKI, HONG GAO, MATTHEW WHITE, BRIAN DE-MARCO, University of Illinois at Urbana-Champaign — We report experimental progress toward using spatial light modulator (SLM) technology to optically trap atoms and to coherently manipulate atomic hyperfine states. An SLM can be used to create arbitrary intensity patterns from a focused gaussian laser beam by imprinting a spatially varying phase (or "kinoform") on the beam. We will discuss the development and implementation of computer algorithms to design kinoforms for controlling the intensity of light in two and three dimensions. Comparison between predicted and measured intensity patterns will be described.

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