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Arbitrary Dipole Potentials with Controllable Intensity and Phase.[1] CHUNDE HUANG, VANDNA GOKHROO, PETER ENGELS, Washington State Univ — Optical dipole potentials are a very flexible tool to manipulate the dynamics of ultracold atoms. Here we use a digital micromirror device (DMD) to generate dipole potentials with customizable shape, phase and temporal control. Schemes to generate binary patterns in both the image plane and the Fourier plane are implemented. Distortions in the laser wavefront are removed using a phase front correction scheme in the Fourier plane. The Binarized Gerchberg-Saxton algorithm for generating binary hologram using a DMD will also be discussed.

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