Abstract Submitted
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Stable blue detuned trap arrays for multi-qubit quantum gate experiments[1] MICHAL PIOTROWICZ, KARA MALLER, MARTY LICHTMAN, SIYUAN ZHANG, GANG LI, LARRY ISENHOWER, MARK SAFFMAN, University of Wisconsin — We have implemented a new approach to trapping single atom qubits using an array of blue detuned Gaussian laser beams which overlap weakly. This creates a two-dimensional array of 3D trap sites that are spatially stable, and are insensitive to phase drifts due to wavelength scale motion of the optical elements used for beam projection. A combination of diffractive and refractive optics is used to generate the beam array with high efficiency. We report on progress towards trapping and quantum state control of single Cs atoms in the array.

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