

Measurement-based entanglement of non-interacting bosonic atoms

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I present our work on entanglement and control of individual neutral atoms in optical tweezers that are laser-cooled to their motional ground state. In particular I focus on a recent work in which we extract a spin-entangled state of two neutral atoms via postselection on their spatial configuration. We verify the presence of entanglement and determine a bound on the postselected fidelity. The experiment has direct analogy to creating polarization entanglement with single photons based on Hong-Ou-Mandel interference. I also present our progress towards experiments with larger numbers of atoms.