

Abstract Submitted
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Towards Raman Cooling of a Single Atom in a Tightly Focused Optical Tweezer JIANWEI LEE, Centre for Quantum Technologies National University of Singapore, SYED ABDULLAH ALJUNID, Centre for Quantum Technologies/Phys.Dept National University of Singapore, MARTIN PAESOLD, ETH Zurich, BRENDA CHNG, Centre for Quantum Technologies/Phys.Dept National University of Singapore, GLEB MASLENNIKOV, Centre for Quantum Technologies National University of Singapore, CHRISTIAN KURTSIEFER, Centre for Quantum Technologies/Phys.Dept National University of Singapore — When loading a single Rb atom from a magneto-optical trap into a tightly focused optical dipole trap we infer an average kinetic energy corresponding to a temperature of tens of microkelvin from release/recapture experiments. In order to bring the atom close to the vibrational ground state of the trap with characteristic frequencies of 20-60 kHz, we implement a Raman cooling technique similar to the one commonly used in ion traps. We expect to resolve the vibrational sidebands. This will lead to a better localization of the atom in free-space atom-photon interaction experiments. We present current experimental progress towards this goal.

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