

Abstract Submitted
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Towards the creation of Fock states of atoms HRISHIKESH KELKAR, TONGCANG LI, DAVID MEDELLIN, KIRSTEN VIERING, MARK RAIZEN, Center for Nonlinear Dynamics and Department of Physics, University of Texas at Austin — Degenerate Bose and Fermi gases have proven to be extremely useful in understanding many quantum phenomenon and quantum phases. However, precise control over the atom number which could enable a clean study of quantum few body systems is still not achieved. Using the method of laser culling of atoms [1] we have already demonstrated sub Poissonian number distribution for ^{87}Rb atoms [2]. A new setup in ^{23}Na will improve upon this result by having much higher trap frequencies, optical access and spatially resolved single atom detection, taking us closer to the goal of creating Fock states. [1] A.M. Dudarev, Q. Niu, and M.G. Raizen. Phys. Rev. Lett. **98**, 063001 (2007). [2] C.-S. Chuu, F. Schreck, T.P. Meyrath, J.L. Hanssen, G.N. Price, and M.G. Raizen. Phys. Rev. Lett. **59**, 260403 (2005).

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