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A new optical trap and repump system for ultracold Strontium

Y. HUANG, M. YAN, B.J. DESALVO, T.C. KILLIAN, Rice University — Atoms can be trapped at the foci of intense laser beams, which can enable the study of interactions and dynamics of ultracold gases. In this poster, we will describe our new trap design. A large volume pancake-shaped optical dipole trap is initially used for loading large numbers of atoms from a Magneto-Optical Trap. Atoms are then evaporatively cooled and compressed into a superimposed crossed-beam dimple trap. This combination improves the reproducibility of the experiment and shortens the time required to create quantum degenerate samples. In the second part of the poster, we will discuss a new repump scheme for laser cooling of Sr that uses the $5s5p^3P_2-5p^2^3P_2$ transition at 481nm. The availability of laser diodes at this wavelength makes this an appealing alternative to other schemes.

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