

Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

State-insensitive two-color optical trapping BINDIYA ARORA, M.S. SAFRONOVA, University of Delaware, CHARLES W. CLARK, National Institute of Standards and Technology, Gaithersburg, Maryland — We propose a scheme for state-insensitive trapping of neutral atoms by using two-color light at convenient wavelengths. In this scheme, a combination of trapping and control lasers is used to minimize the variance of the potential experienced by Rb atom in ground and excited $5p_{3/2}$ states. We predict the values of trap and control wavelengths for which the $5s$ and $5p_{3/2}$ levels have same ac Stark shifts in the presence of two laser fields. The calculations are based on the relativistic all-order method where all single and double excitations of the Dirac-Hartree-Fock wave function are included to all orders of perturbation theory.

Bindiya Arora
University of Delaware

Date submitted: 01 Feb 2008

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