

Abstract Submitted
for the DAMOP07 Meeting of
The American Physical Society

Collective self-focusing and atom-optical solitons¹ WILLIAM WILLIAMS, MARK SAFFMAN, University of Wisconsin Madison — We describe collective atom-optical solitons and modulational instability which appear due to mutual self-focusing of light and cold atoms. It is normally impossible to achieve simultaneous focusing since a two-level atom gives self-focusing of light for blue detuning, whereas the dipole potential is attractive for red detuning. Due to saturation effects self-focusing occurs with an attractive dipole potential under conditions of red detuning. We present experimental signatures of this effect observed using cold Cs atoms in a MOT.

¹This work was supported by the NSF

Mark Saffman
University of Wisconsin Madison

Date submitted: 02 Feb 2007

Electronic form version 1.4