Abstract Submitted
for the DAMOP08 Meeting of
The American Physical Society

Image Storage in Hot Vapors L. ZHAO, T. WANG, Physics Department, University of Connecticut, Y. XIAO, Harvard-Smithsonian Center for Astrophysics, S.F. YELIN, Physics Department, University of Connecticut; ITAMP, Harvard-Smithsonian Center for Astrophysics — We theoretically investigate image storage in hot atomic vapor. A so-called $4f$ system is adopted for imaging and an atomic vapor cell is placed over the transform plane. The Fraunhofer diffraction pattern of an object in the object plane can thus be transformed into atomic Raman coherence according to the idea of "light storage". We investigate how the stored diffraction pattern evolves under diffusion and discuss the essence of the stability of its dark spots. Our result indicates, under appropriate conditions, that an image can be reconstructed with high fidelity. The main reason for this procedure to work is the fact that diffusion of opposite-phase components of the diffraction pattern interfere destructively.

L. Zhao
Physics Department, University of Connecticut

Date submitted: 02 Feb 2008 Electronic form version 1.4