Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

Simulations using echo sequences to observe coherence in a cold Rydberg gas[1] JESÚS V. HERNÁNDEZ, Kansas State University, FRANCIS ROBICHEAUX, Auburn University — We simulate the effect of special excitation pulses on a cold gas of atoms. First a rotary echo sequence is used to examine the coherent nature of a frozen Rydberg gas. If collective excitation and de-excitation is present with little or no source of dephasing, after these pulses the system should be returned to a state with few excitations, and a strong echo signal should occur. We investigate systems that should display a perfect echo and systems where the interaction between atoms reduces the echo signal. A spin echo sequence is also used on a system of coherent hopping excitations, and we simulate how the strength of a spin echo signal is affected by thermal motion.

[1]This material is based upon work supported by the National Science Foundation under grant no. 0653301

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Date submitted: 27 Jan 2009 Electronic form version 1.4