

Abstract Submitted  
for the DAMOP06 Meeting of  
The American Physical Society

**Dark-state polariton collapses and revivals** ODELL COLLINS, STEWART JENKINS, DZMITRY MATSUKEVICH, THIERRY CHANELIERE, SHAU-YU LAN, ALEX KUZMICH, T.A. BRIAN KENNEDY, School of Physics, Georgia Institute of Technology — We investigate the dynamics of dark-state polaritons in an atomic ensemble with ground-state degeneracy. A signal light pulse may be stored and retrieved from the atomic sample by adiabatic variation of the amplitude of a control field. During the storage process, a magnetic field causes a rotation of the atomic hyperfine coherences, leading to collapses and revivals of the dark-state polariton number. These collapses and revivals are observed in measurements of the retrieved signal field, as a function of storage time and magnetic field orientation. We explain the observed reduction of revival amplitudes by accounting for magnetic field gradients within the atomic sample.

Odell Collins  
School of Physics, Georgia Institute of Technology

Date submitted: 27 Jan 2006

Electronic form version 1.4