

Abstract Submitted
for the TSF10 Meeting of
The American Physical Society

Effect of Pulse Shaping on Electromagnetic Induced Transparency and its Applications¹ DONG SUN, SUMANTA DAS, Department of Physics, Texas A&M University, ZOE-ELIZABETH SARIYANNI, JILA, University of Colorado, YURI ROSTOVTSEV, Department of Physics, University of North Texas — We have theoretically studied the effect of pulse shapes on Electromagnetic Induced Transparency (EIT) and the propagation of pulses inside EIT medium. Our numerical simulations are based on an isotropic homogeneous medium composed of 3-level Λ type atoms coupled to two co-propagating laser fields. It has been found that even with the two-photon resonance, if these two fields have unmatched pulse shapes, there is still no EIT. The mechanism is explained in the dressed state, in which a pulse shape dependent interaction is found. We also observed the nonlinear effect of EIT on pulse propagation inside medium by using Fourier Analysis. Some possible applications are proposed.

¹This work is supported by Robert A. Welch Foundation.

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Date submitted: 20 Sep 2010

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