

Abstract Submitted  
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**Dynamical Evolution in the Propagation of Light in a Four-Level Medium**<sup>1</sup> FRANK A. NARDUCCI, JON P. DAVIS, Naval Air Systems Command — We theoretically study the propagation of a weak probe travelling through a sample of four level atoms being driven by a pump laser and a control laser. We focus on the slow and fast light properties. Although quasi-static pulse propagation in such a medium has been studied before (e.g [1,2]), we are interested in the dynamics of the pulse propagation when characteristics of the controlling fields are suddenly changed while the pulse is in the medium. We present our dynamical model which emphasizes atom dynamics in conjunction with the pulse propagation. We examine the behavior of the system in the neighborhood of the sharp dispersion feature already pointed out in [2].

[1] S.E. Harris and Y. Yamamoto, *Phys. Rev. Lett.*, **81**, 3611 (1998).

[2] H. Kang, G. Hernandez and Y. Zhu, *Phys. Rev A*, **70**, 011801(R), (2004).

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