

Abstract Submitted  
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**Electromagnetically Induced Transparency in an Open V-Type Molecular System** ANGELOS LAZOUKIS, TEODORA KIROVA, ERGIN AHMED, PENG QI, Temple University, JOHN HUENNEKENS, Lehigh University, MARJATTA LYYRA, Temple University — We report experimental observation of Electromagnetically Induced Transparency (EIT) in an inhomogeneously broadened V-type molecular vapor of Na<sub>2</sub>. We present a theoretical analysis for both closed and open systems. For the closed system, which involves only the energy levels required to create the coherence, our results indicate that saturation is responsible for a dip of modest depth in both co- and counter-propagating geometries. However, EIT dramatically increases the dip in the co-propagating case and fills in the dip in the counter-propagating case. In the open system, which includes mechanisms for decay to additional energy levels, as is common in molecular systems, the saturation dip is much deeper. Again, EIT tends to deepen the dip in the co-propagating case and partially fills it in the counter-propagating case. The observed feature in the counter-propagating case cannot be easily distinguished from saturation. However, the deep dip in the experimental co-propagating signal can reasonably be associated in part to EIT. Supported by NSF PHY 0555608, PHY 0855502, and PHY 0968898.

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