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Investigation of Electromagnetically Induced Transparency in Open V, Λ and Cascade Doppler-Broadened Molecular Systems ANGELOS LAZOUDIS, PENG QI, ERGIN AHMED, A. MARJATTA LYYRA, Temple University, Philadelphia — We have demonstrated electromagnetically induced transparency (EIT) for two-color transitions in inhomogeneously broadened lithium and sodium dimer vapors. EIT has been observed via fluorescence detection in three systems of different energy level configurations (V, Λ, Ξ) by employing two continuous-wave single frequency lasers. The dependence of the transparency profile on the beam geometry (V-system), coupling laser intensity (Λ-system) and wavelength ratio of the applied fields (cascade system) has been investigated. The openness of the molecular V-type system is accountable for rendering the medium transparent even for residual Doppler line widths greater than the induced Autler-Townes splitting. Our findings have been complemented by theoretical studies that trace the presence of EIT at the density matrix level. These theoretical predictions agree well with the experimental results.

Angelos Lazoudis
Temple University, Philadelphia

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