Normal modes and propagation dynamics in a strongly driven Raman medium

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Abstract: Using a strong field, the collinear propagation of two weak sidebands was studied in Raman medium in a strong field. The superposition of the sideband fields propagated freely in the medium at the vacuum speed of light. The coupled normal mode determined the effective frequency governing the coherence of the medium. A slow group velocity of light was obtained in far-off-resonance Raman medium for a small effective two-photon detuning.

Index Keywords: Eigenvalues and eigenfunctions; Electromagnetic wave propagation; Electron energy levels; Electron transitions; Light velocity; Photons; Resonance; Spectrum analysis; Wave equations; Collinear propagation; Group velocities; Raman transition; Raman scattering

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