

Abstract Submitted
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Spontaneously generated coherence effects in an inverted Y-type atomic system coupled by three coherent fields¹ JIANBING QI, Penn State University, Berks Campus — We investigate the spontaneous emission from an inverted Y-type atomic system coupled by three coherent fields. We use the Schrödinger equation to calculate the probability amplitudes of the wave function of the system and derive an analytical expression of the spontaneous emission spectrum to trace the origin of the spectral features. Quantum interference effects, such as the spectral line narrowing, spectrum splitting, and dark resonance, are observed. The number of spectral components, the spectral linewidth, and relative heights can be very different depending on the physical parameters. A variety of spontaneous emission spectral features can be controlled by the amplitude of the coupling fields and the preparation of the initial quantum state of the atom. We propose an ultracold atomic ⁸⁷Rb system for experimental observation.

¹Jianbing Qi, Phys. Rev. A 80, 043827 (2009)

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