

Quantum-interference effects for gamma radiation under crossing- anticrossing conditions for nuclear levels in an RF field

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Abstract

A new approach to observing the effect of electromagnetically induced transparency in gamma optics is proposed. The propagation of a resonant photon in a ^{57}Fe magnetic medium in an applied rf field is considered for this purpose. It is shown that, under crossing-anticrossing conditions, a resonant rf field substantially changes the gamma-optical properties of the medium, which become dependent on the parameters of the field. This opens the possibility for exercising a coherent control of the photon group velocity and a controllable filtration of unpolarized gamma radiation in a sample. © Nauka/Interperiodica 2006.

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