

Inhibition of Two-Photon Absorption in a Four-Level Atomic System with Closed-Loop Configuration

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Abstract: We theoretically investigate the features of two-photon absorption in a coherently driven four-level atomic system with closed-loop configuration. It is found that two-photon absorption can be completely suppressed just by properly adjusting the relative phase of four coherent low-intensity driving fields and the atomic system becomes transparent against two-photon absorption. From a physical point of view, we explicitly explain these results in terms of quantum interference induced by two different two-photon excitation channels.

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Key words: two-photon absorption, quantum interference, closed-loop configuration

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