

Bare-State Time-Evolving Operator Solution to Raman Model in Λ Configuration

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Abstract: We derive exact analytical expressions of time-evolving bare-state operators of level occupation numbers and the photon numbers for a composite system consisting of a three-level atom interacting with two modes of a quantized electromagnetic field in Λ configuration. These results demonstrate the oscillations with three-family frequencies for a nonzero detuning, which dramatically differ from the previous results showing only single-family Rabi oscillations.

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Key words: three-level atom, quantized fields, Raman processes, operator solution

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