

Optical Bloch Equations Modified with Phonon-Induced Intensity-Dependent Dephasing

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Abstract: We extend the exciton population equations of a two-level quantum dot system with weak excitation to the ones with strong excitations, in which, the phonon-induced intensity-dependent dephasing time and decay rate are involved. The straightforward calculated populations from the modified population equations demonstrate the damping behavior of Rabi oscillation as the external field increasing. The effect of the intensity-dependent dephasing time and the intensity-dependent decay rate are also discussed.

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Key words: decoherence, dephasing, optical Bloch equation, quantum dot

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