Parametric resonance of acoustic and optical phonons in a quantum well

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Abstract: The parametric resonance of acoustic and optical phonons in a quantum well in the presence of an external electromagnetic field is theoretically predicted by using a set of quantum transport equations for the phonons. Dispersions of the resonant phonon frequency and the threshold amplitude of the field for parametric amplification of the acoustic phonons are obtained. If they are obtained, then they are also estimated for realistic semiconductor models.

Author Keywords: Electron-phonon interaction; Parametric resonance; Quantum well

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