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Measurement of the Deformation Potentials for GaAs using Polarized Photoluminescence *

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Abstract

The deformation potentials a, b and d for GaAs have been determined from polarized photoluminescence measurements upon a set of epitaxially grown strained GaAs structures possessing varying levels of compressive biaxial lattice strain. X-ray diffraction measurements yield values for the degree of lattice strain while the polarized photoluminescence measurements permit a separate determination of the heavy hole and light hole band energies. Correlation of these data allow determination of the deformation potentials within the context of the Orbital-Strain Hamiltonian.

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