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Uniaxial strain effects on the band structure and effective masses of wurtzite GaAs TAWINAN CHEIWCHANCHAMNANGIJ, WALTER LAMBRECHT, Case Western Reserve University — While GaAs in bulk form has the zincblende structure, recent interest in the wurtzite form of GaAs arises in the context of nanowires. The band structure of wurtzite GaAs is calculated using the full-potential (FP) linearized muffin-tin orbital (LMTO) method within the local density approximation. The relativistic and spin-orbit coupling effects are included when obtaining the conduction and valence band effective mass tensors and related Rashba-Sheka-Pikus Hamiltonian parameters. The effects of c -axis uniaxial strain on the band structure is investigated and used to determine the relevant strain deformation potentials. It is found that under increasing uniaxial strain, a crossing of the Γ_5 and Γ_1 valence band levels occurs first, followed at higher strain by an additional crossing of the Γ_3 and Γ_1 conduction bands.. The latter is related to a corresponding direct to indirect ($\Gamma - L$) crossing under uniaxial strain in zincblende.

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