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[Inscreva-se](#)

- 1 WIESRMA, D. S. The physics and applications of random lasers. **Nature Physics** v. 4, p.359–367, 2008. doi:10.1038/nphys971.
 2 CAO, H. et al. Random laser action in semiconductor powder. **Physical Review Letters**, v.82, p.2278–2281, 1999. doi:10.1103/PhysRevLett.82.2278. **Área:**

Física Aplicada

174

Realistic g-factors and k.p parameters for III-V semiconductors from 14-band k.p Hamiltonian

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Recently, we developed a procedure to determine effective mass parameters from DFT calculations that provided realistic band structures for 8×8 k.p ZB Hamiltonians. (1-2) Although band structures reproduced the other methods up to 20 % of the First Brillouin Zone and the calculated g-factor are in agreement with literature for such Hamiltonians, the g-factors for small band gap materials are not realistic due to the proximity of bands which are not taken into account in the usual 8×8 k.p Hamiltonian. In this work we go further in the analysis of the g-factors by analyzing Hamiltonians with different number of states and approximation orders. Our goal is to determine if one can theoretically achieve realistic values also for g-factors by playing with the number of bands of the Hamiltonian using the Roth approximation (3) to a higher order, using also realistic Kane P0 and P1 interband interaction parameters.

Subárea:

Física de Materiais **Apresentação do trabalho acadêmico para o público geral:**

Não Referências:

- 1 BASTOS, C. M. O. et al. Stability and accuracy control of k.p parameters. **Semiconductor Science and Technology**, v. 31, n. 10, p. 105002-1-105002-10, 2016.
 2 BASTOS, C. M. O. et al. A comprehensive study of g-factors, elastic, structural and electronic properties of III-V semiconductors using hybrid-density functional theory. **Journal of Applied Physics**, v. 123, n. 6, p. 065702-1-065702-13, Feb. 2018.
 3 ROTH, L. M.; LAX, B.; ZWERDLING, S. Theory of optical magneto-absorption effects in semiconductors. **Physical Review**, v. 114, n. 1, p. 90-104, Apr. 1959. **Área:**

Física Básica

22

Recombination dynamics of Landau levels in an InGaAs/InP quantum well

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Dynamics of differently spin-polarized photoexcited carriers was investigated by the time-resolved photoluminescence (PL) in a system of Landau levels (LL) formed in an InGaAs/InP quantum well.