

Abstract Submitted
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Calculation of the Electronic Structure for the AlGaAs Quantum Well CHIN-SHENG WU, Yuan Ze University — Quantum wells are important in semiconductor lasers because they allow some degree of freedom in the design of the emitted wavelength through adjustment of the energy levels. We apply the various the well width w and barrier height V in order to match the device information made by Willander. Solving the Schrödinger equation with exchange- correlation energy and effective mass of electrons for a finite potential will produce values of the energy levels within the well. Alternating GaAs-AlGaAs layers produce high and low energy gaps. The result is the generation of quantum wells. The electrons in the donor section AlGaAs diffuse into the low band gap GaAs section, where is free of impurity atoms, therefore the effective mass of electrons reduces and the mobility increases. Dispersion relations in conduction band and valence band are applied for the effective mass approximation. Because of the presence of quantum wells the electrons have discrete energies and these appear as peak in the absorption measurements.

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