

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Equispaced level in the quantum well calculated for seven semiconductor ternary alloys conduction band ARTHUR EJERE, Department of Physics, University of Benin, Benin city, Nigeria, GODFREY AKPOJOTOR, Theoretical and Computational Condensed Matter Physics, Physics Department, Delta State University, Abraka, Nigeria — A model of equispaced-level conduction band in semiconductor quantum well (QW) nanostructures is derived. The procedure starts with the effective-mass Schrodinger equation, with the local conduction-band edge as the potential experienced by an electron in the QW. Then the effective-mass Schrodinger equation with linear harmonic potential is made to coincide with it. In this study, an attempt has been made to model some semiconductor ternary alloys ($A_xB_{1-x}C$) using this procedure, thereby adding to the varieties of QW nanostructures designs in existence. Two models are derived, one with a confining potential that may be realized by appropriate grading of the semiconductor alloy and the other with a non-confining potential where the electron effective-mass tends to zero as z tends to infinity [$m(z \rightarrow \pm\infty) \rightarrow 0$]. This latter type of model is not realizable.

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Date submitted: 21 Nov 2012

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