

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Confinement of an electron with effective mass depending on its position inside a semiconductor $\text{Al}_x\text{Ga}_{1-x}\text{As}$ medium¹ MARTIN EDUARDO MOLINAR-TABARES, Organismo de Cuenca Noroeste, Comisión Nacional del Agua, CARLOS FIGUEROA-NAVARRO, Departamento de Ingeniería Industrial, Universidad de Sonora, LAMBERTO CASTRO-ARCE, Unidad Regional Sur, Universidad de Sonora, JULIO CÉSAR CAMPOS-GARCÍA, Campus Cajeme, Universidad de Sonora — The confinement of an electron inside a two-dimensional semiconductor structure of $\text{Al}_x\text{Ga}_{1-x}\text{As}$ which has been deposited on a substrate is studied. In the structure, that has a circular form with radii ρ_0 , the concentration x in a point depends of the distance from this point to the center of the circumference, and this dependence appears in the potential energy of the electron and in its effective mass too. Considering different forms in which concentration x varies respect ρ , we solve the Schrödinger equation in polar coordinates (ρ, θ) using a basis formed with the first zeros of Bessel functions of different order m . Taking into account in the Schrödinger equation the dependence of the effective mass of the electron on its radial coordinate ρ , we work a numerical solution and we obtain the ground state energy, the energy for some excited states, and the probability density of those states.

¹Authors thank to SNI-CONACYT its support for the work.

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Date submitted: 12 Nov 2013

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