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Simulating manipulation of a single electron in quantum wells[1]
LILIA MEZA-MONTES, Instituto de Fisica BUAP, A. RODRIGUEZ-MORENO[2], D. HERNANDEZ-DE-LA-LUZ, CIDS-ICUAP — The search of quantum-dot based qubits has led to recent experiments which allow the coherent manipulation of a single electron spin in quantum dots. In order to address this kind of experiments theoretically, we determine the time evolution of the movement of a single electron, described by a Gaussian packet, through a quantum well whose barrier heights depend on time. The entrance of the packet is obtained by lowering the left barrier, the trapping into the well by returning it to its original height, and finally the leaving is caused when the right barrier disappears. The time-dependent Schroedinger equation is solved within a finite-difference scheme.

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