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**Ground state energy of an electron in a GaAs pillbox immersed in a GaAlAs substrate** GERARDO JORGE VAZQUEZ-FONSECA, MARCELO DEL CASTILLO-MUSSOT, Instituto de Fisica, UNAM, SANDRA MILENA RAMOS-ARTEAGA, NELSON PORRAS-MONTENEGRO, Universidad del Valle, Colombia — In this work we have studied the ground state energy behavior for a GaAs pillbox immersed in a system of GaAlAs as a function the thickness of the barrier potential when the length of the pillbox is fixed, as function the length of the pillbox when the thickness of the barriers remained constant, and as a function of the pillbox position in the host of GaAlAs. Also, we studied the behavior of the energy of the ground state in this system for different Al concentrations. It is important to stress that for small lengths of the pillbox the energy of the ground state as function de relative position to the barrier potential presents a similar behavior as the binding energy of a hydrogenic impurity in quantum wells, quantum wires and quantum dots. We also found that there are critical values of the pillbox length for which there are no bound states.

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