

### **NUMERICAL SIMULATIONS OF COUPLED QUANTUM DOTS**

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#### **ABSTRACT**

In the work we present self-consistent solutions of Poisson and Schrödinger equations which describe electron states in coupled quantum dots. Results for two neighbouring quantum dots formed in an electrostatic way are discussed. Zero-dimensional electron gas is investigated in the structure proposed by Kastner [1] and presented in our earlier works [2–4]. In the work results of simulations performed in three- and two-dimensional space are shown. We included Hartree potential for modeling Coulomb interactions among electrons in the system. We also considered the exchange and correlation potentials which ensured that each discrete energy level was occupied by only one electron. The exchange and correlation potentials were taken into account with the help of the Local Density Approximation (LDA).