1026-70-44 **Lia Leon Margolin*** (lmargolin@mmm.edu), Marymount Manhattan College, 221 East 71 street, New York, NY , and **Shalva Tsiklauri** (shalva89@hotmail.com), University of Phoenix Jersey City Campus, 100 Town Square Place, Jersey City, NJ. *Mathematical Modeling of Few Electron Quantum Dots in 2D and 3D space.*

One of the outstanding achievements of nanotechnology is construction of artificial atoms- a few-electron quantum dots in semiconductor materials. Theoretical investigations of three and four electron quantum dots have been carried out only by the use of approximate methods (Variational, Hartree-Fock, Constant-Interaction Model, Exact Diagonal Approximation and est.)However, these methods are applicable only if confinement energy dE is much larger than electron-electron interaction energies E. In lateral quantum dots, defined by metallic gates in a 2D electron gas, dE =10E. Therefore, above listed approximate methods cannot provide adequate description of the system. In the present article a new mathematical model for the description of few-electron (N=3,4,5,6) quantum dots in 2D and 3D space is created, and basic states of three electron quantum dots in parabolic confinement are investigated. It is important to mention that first time theoretical investigations of three electron quantum dots have been carried out taking into consideration logarithmic potential of electron-electron interactions. Obtained theoretical results demonstrated satisfactory agreement with existing experimental data. (Received January 31, 2007)