

# Helium-like quantum dot in a magnetic field of arbitrary strength

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## ABSTRACT

We investigate, two-electron 3D quantum dots in an external magnetic field  $B$ . Due to mixed spherical and cylindrical symmetry the Schrodinger equation is not completely separable. The equation has been solved by the expansion of the wavefunctions into double-power series. Highly accurate numerical solutions have been obtained by imposing on the radial functions appropriate boundary conditions. For particular values of  $B$  analytical eigenfunctions of the Hamiltonian have been constructed. The asymptotic limit of a very strong magnetic field has been also studied. Properties of the two-electron semiconductor quantum dots are investigated and compared with the two-dimensional model.