

## Off-Center $D^-$ Centers in a Quantum Dot in the Presence of a Perpendicular Magnetic Fields

XIE Wen-Fang

Department of Physics, Guangzhou University, Guangzhou 510405, China  
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**Abstract:** We investigate the effect of the position of the donor in quantum dots on the energy spectrum in the presence of a perpendicular magnetic field by using the method of few-body physics. As a function of the magnetic field, we find, when  $D^-$  centers are placed sufficiently off-center, discontinuous ground-state transitions which are similar to those found in many-electron parabolic quantum dots. Series of magic numbers of angular momentum which minimize the ground-state electron-electron interaction energy have been discovered. The dependence of the binding energy of the ground-state of the  $D^-$  center on the dot radius for a few values of the magnetic field strength is obtained and compared with other results.

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Key words:  $D^-$  center, few-body physics, quantum dot

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