

Abstract Submitted
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The influence of quantum confinement on magnetism in quantum dots.¹ RAMIN ABOLFATH, IGOR ZUTIC, SUNY Buffalo, PAWEL HAWRYLAK, NRC Ottawa — Owing to its simplicity, the vast majority of theoretical studies of magnetically doped quantum dots imply parabolic shape of the quantum confinement. However, several methods of fabricating quantum dots are more appropriately described by other forms of quantum confinement that remain largely unexplored. To assess the influence of the choice of confining potential and its strength, we perform a systematic comparison of magnetic phases of quantum dots described by parabolic and Gaussian confinement. We focus on the magnetization, carrier spin polarization, and magnetic transition temperature. We clarify which of these quantities could be strongly modified by the choice of non-parabolic quantum confinement and predict related experimental implications [1]. Cond-mat/0612489.

[1] R. Abolfath, P. Hawrylak, I. Zutic, preprint.

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