

Abstract Submitted  
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**Piezomagnetic quantum dots**<sup>1</sup> RAMIN ABOLFATH, SUNY Buffalo; University of Texas, Dallas, A.G. PETUKHOV, South Dakota School of Mines and Technology, Rapid City, IGOR ZUTIC, SUNY Buffalo — We study the influence of deformations on magnetic ordering in quantum dots doped with magnetic impurities. The reduction of symmetry and the associated deformation from circular to elliptical quantum confinement lead to the formation of piezomagnetic quantum dots <sup>2</sup>. The strength of elliptical deformation can be controlled by the gate voltage to change the magnitude of magnetization, at a fixed number of carriers and in the absence of applied magnetic field. We reveal a reentrant magnetic ordering with the increase of elliptical deformation and suggest that the piezomagnetic quantum dots can be used as nanoscale magnetic switches. Finally, we discuss thermodynamic stability of piezomagnetism in such quantum dots.

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<sup>2</sup>R. M. Abolfath, A. G. Petukhov, and I. Zutic, arXiv:0707.2805.

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