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Tailoring Magnetism in Quantum Dots IGOR ZUTIC[1], RAMIN ABOLFATH, SUNY Buffalo, PAWEL HAWRYLAK, NRC Ottawa — We study magnetism in magnetically doped quantum dots as a function of particle numbers, temperature, confining potential, and the strength of Coulomb interaction screening. We show that magnetism can be tailored by controlling the electron-electron Coulomb interaction, even without changing the number of particles. The interplay of strong Coulomb interactions and quantum confinement leads to enhanced inhomogeneous magnetization which persists at substantially higher temperatures than in the non-interacting case or in the bulk-like dilute magnetic semiconductors. We predict a series of electronic spin transitions which arise from the competition between the many-body gap and magnetic thermal fluctuations. Cond-mat/0612489.
[1] R. Abolfath, P. Hawrylak, I. Žutić, preprint.

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