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Ground State Properties of Magnetic Quantum Dots with Multiple Occupancies[1] JAMES PIENTKA, Saint Bonaventure University, IGOR ZUTIC, JONG HAN, University at Buffalo — Semiconductor quantum dots doped with magnetic impurities provide an intriguing opportunity to explore the interplay of confinement, Coulomb and exchange interactions [1,2]. Using exact diagonalization we study the ground state properties of a magnetic quantum dot with multiple occupancies. We show that the ground state not only depends on the orientation of the carrier and impurity spins, but is also very sensitive to the position of the magnetic impurities in the quantum dot. Our results reveal magnetic frustration and strongly correlated states, qualitatively different from the Fermi liquid behavior. [1] J. M. Pientka R. Oszwaldowski, A. G. Petukhov, J. E. Han, and I. Zutic, Phys. Rev. B 86, 161403(R) (2012).[2] R. Oszwaldowski, P. Stano, A. G. Petukhov, and I. Zutic, Phys. Rev. B 86, 201408(R)(2012).

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