Abstract Submitted
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Trion spectroscopy and electrical control of a Single Mn Atom in a Quantum Dot J. FERNÁNDEZ-ROSSIER, Unviersity of Alicante — I present a microscopic theory for the photoluminescence (PL) of a single self-assembled CdTe quantum dot doped with a single Mn atom. The few-body problem of electrons and holes exchange-coupled to the Mn spin is diagonalized exactly. The model permits a complete understanding of the non-trivial 11 peak spectra reported recently [1] in terms of charge-dependent effective Hamiltonian for the Mn spin. Whereas in the neutral configuration the Mn in the quantum dot is paramagnetic, the electron-doped dot spin states are spin rotationally invariant and the hole-doped dot spins states are quantized along the growth direction. Preliminary results of the time resolved response of the Mn spin to suitably engineered laser pulses will be discussed, both for the case of charged [1] and neutral dots[2,3].

[1] Y. Léger, L. Besombes, J. Fernàndez-Rossier, L. Maingault, and H. Mariette Phys. Rev. Lett. **97**, 107401 (2006)
[2] J. Fernández-Rossier Phys. Rev. B **73**, 045301 (2006)
[3] A. O. Govorov and A. V. Kalameitsev, Phys. Rev. B **71**, 035338 (2005)

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