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**Two Kondo Impurity Spin Interactions in Quantum Dots** BARBARA JONES, IBM Almaden Research Center, San Jose, CA, TZEN ONG, Department of Applied Physics, Stanford University, IBM Almaden Research Center, San Jose, CA, DAVID GOLDHABER-GORDON, Department of Physics, Stanford University — The Kondo effect in a single quantum dot, where the localized electron behaves as a magnetic impurity, has been well studied[1]. A recent experiment by C.M. Marcus's group indicates a possible RKKY-like spin interaction between two quantum dots (QD) in the Coulomb Blockade regime.[2] We have obtained an effective Hamiltonian by carrying out a perturbation expansion (related to the Schrieffer-Wolf transformation) of an Anderson model of the two QD system (including terms representing the tunneling) to fourth order. We obtain the standard Kondo-coupling terms at second order, and we obtain RKKY-like terms at fourth order. We have also kept the scattering terms obtained at second-order, which are usually neglected, in order to study their effects on possible fixed points for the two-QD problem. We discuss the full range of interaction terms obtained at the level of RKKY, and their implications for the low-temperature behavior. ----- [1]Nature **391**, 156 (1998) [2]Science **304**, 565 (2004).

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