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Transconductance of a double quantum dot system coupled to a microcavity VIJAY KASISOMAYAJULA, PETER BONANNO, ONOFRIO RUSSO, New Jersey Institute of Technology — The transconductance of a double quantum dot system in the coulomb blockade regime for single spin $1/2$ electrons on each dot mutually coupled by an exchange interaction has been studied[1]. We investigate the effect of this system when coupled to a microcavity and determine conditions for the external potential on each of the dots. The significant peaking in the transconductance as found without cavity mode coupling, depends to a large degree on the potential of each dot. The electron spins on each of the quantum dots are responsible for the strong mutual interaction but, also these spins result in only weak coupling to the adjacent leads. The weak Kondo condition, however is responsible for the enhanced transconductance. The addition of the dominant modes of a strongly coupled microcavity and its effect on the transconductance are discussed for differing potentials and spacing between the dots, and for some conditions result in an enhanced transconductance. 1. V. Koerting, P. Wolfle. PRL 99, 036807(2007)

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