Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Spin polarization of current passing through a double level quantum dot in magnetic field LAM CHUEN WONG, TAI KAI NG, Hong Kong University of Science and Technology — The spin polarization of the current passing through a GaAs quantum dot is found experimentally by Potok *et. al.*[1] to be always polarized in the same direction as external field when varying the gate voltage. This is in disagreement with theories that assume single energy level on the quantum dot. We investigate the problem by considering a model of double level quantum dot with strong exchange coupling between the electrons on the two levels. A generalized 1/N expansion method was used to construct the approximate ground state, spectral function and then the current. Our results are compared with experimental result by Potok *et.al.*.

[1]R. M. Potok, J. A. Folk, C. M. Marcus, V. Umansky, M. Hanson, and A. C. Gossard, Phys. Rev. Lett. **91**, 016802(2003)

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Date submitted: 01 Dec 2004 Electronic form version 1.4