Decoherence Free States for Two and Four charge qubits under static local fluctuations TETSUFUMI TANAMOTO, SHINOBU FUJITA, Corporate R & D Center, Toshiba Corporation, XUEDONG HU, Department of Physics, University at Buffalo, SUNY — We analyze the effects of static fluctuations of qubit parameters on decoherence free subspace (DFS)[1] in charge qubits that are two-level atoms based on coupled quantum dots. We solve the master equations of four and two charge qubits and the detector as two serially coupled quantum point contacts (QPCs)[2,3]. We show that robustness of DFS depends on the magnitude of the fluctuations. We also show exact solutions for two-qubit detection under collective decoherence measurement environment. [1]D. A. Lidar and K. B. Whaley, quant-ph/0301032 [2]T. Tanamoto and X. Hu, Phys. Rev. B69 115301 (2004). [3]T. Tanamoto and X. Hu, cond-mat/0310293.

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