

MAR07-2006-001033

Abstract for an Invited Paper
for the MAR07 Meeting of
the American Physical Society

Maximum entropy-principle approach to quantum storage in strongly correlated systems

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We shall investigate whether it is possible to generate QUBITS and/or QUTRITS starting with a modified version of Hubbard-Anderson Hamiltonian pertinent to describe magnetic properties of strongly correlated systems, particularly manganites. For this purpose, we shall derive the expressions for expectation values of a set of relevant operators starting with the Shannon entropy and using maximum entropy principle. It also allows us to derive Weiss relation that relates the spin-projection at a site to the interaction of that site with the rest of the medium. In the presence of an internal or applied magnetic field, or both, the absolute minima of free energy for spin projection in z-direction is +1, 0 and -1 for a triplet pair of fermion at three different temperatures, which are identified as QUBITS (in case one does not distinguish between ± 1 projections) or QUTRITS.