

abstract

MATHEMATICAL PHYSICS SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

We consider an open quantum system consisting of two spins $1/2$ (qubits) interacting with thermal reservoirs (environments). Each spin is coupled to its own local reservoir, and the spins are coupled to a common third reservoir (collective coupling). The interaction of each spin with each reservoir has two parts, an energy conserving and an energy exchange one. We analyze the processes of decoherence and disentanglement of the two spins. We obtain decoherence times (temporal decay of off-diagonal density matrix elements) and we show that generically, entanglement (concurrence) dies out in a finite time. We explain how to estimate disentanglement times. Our approach is based on a recently developed rigorous theory of quantum resonances which allows us to give a detailed description of the reduced dynamics of the two spins. This talk is accessible to an audience of both mathematicians and physicists.