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Decoherence and entanglement of a pair of coupled qubits MOHAMMAD SAHRAPOUR, NANCY MAKRI, University of Illinois at Urbana-Champaign — We analyze the quantum dynamics of a pair of qubits coupled via Ising-type coupling under the influence of a common dissipative bath. We present results of simulations for a range of system biases and spin-spin couplings at two values of bath temperature ($\beta = 1, 5$). We also discuss the dynamics of entanglement when starting with fully entangled states and find that for some values of the system parameters, steady-state entanglement is observed. These simulations are carried out via the iterative path integral methodology developed earlier in our group which delivers efficient, numerically exact long time quantum dynamics.

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