

Abstract Submitted
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Exact solution of qubit decoherence models by a transfer matrix method. DIU NGHIEM, UW-Madison, ROBERT JOYNT, UW-Madison, QUANTUM COMPUTING UW-MADISON TEAM — A new method for the solution of the behavior of an ensemble of qubits in a random time-dependent external field was found. In this method the forward evolution in time is governed by a transfer matrix whose eigenvalues determine the various decoherence times. The method provides an exact solution in cases where the noise is piecewise constant in time. It can apply to a realistic model of decoherence of electron spins in semiconductors as well. Results are obtained for the non-perturbative regimes of the models, and we see a transition from weak relaxation to overdamped behavior as a function of noise anisotropy.

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