Dynamical Suppression of Pure Amplitude Damping in Two-State Quantum Systems

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Abstract: Dynamical control of decoherence induced by the environment in a single quantum-bit system is investigated. We choose the suitable perturbations acting on the qubit system to decrease the decoherence due to pure amplitude damping. The scheme proposed here is based on the free-Hamiltonian-elimination technique and the parity-kick technique, which concludes two homogeneous classical large-blue-detuned optical fields with different frequencies added to the qubit system. By applying this scheme, the decoherence can be completely suppressed.

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