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Decoherence in two Coupled Qubits

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Abstract: We have developed quantitative description of quantum coherent oscillations in the system of two coupled qubits in the presence of weak decoherence that in general can be correlated between the two qubits. It is shown that in the experimentally realized scheme of excitation of the oscillations, their waveform is not very sensitive to the magnitude of decoherence correlations. Modification of this scheme into potentially useful probe of the degree of decoherence correlations at the two qubits is suggested.

Key Words: decoherence, coupled qubits, density matrix