INFN - Trieste & Dipartimento di Fisica Joint Seminar

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Physics Dept. - Strada Costiera, 11 – Trieste

Distilling entanglement from qubits interacting with local common reservoirs

Abstract
We study a system composed of four qubits in the presence of two local common reservoirs, their markovian dissipative dynamics corresponding to that of vacuum squeezed reservoirs. We consider two maximally entangled qubits AB as the source, and two maximally entangled qubits A'B' as the ancillae. The pair AA' interacts with a common local reservoir in a squeezed vacuum state, characterized by the squeezing parameters r and ϑ; while the pair BB' interact with another reservoir with identical characteristics. The Lindblad master equation is used to describe the evolution of the whole system, concurrence and fidelity of the source are computed when measurements are performed on the ancillae at time t. For given initial conditions, concurrence in the source pair reach a stationary value different from zero and its fidelity is f > ½ . For some squeezing parameters, a substantial improvement of the entanglement in the source is obtained compared with other protocols using independent reservoirs.

Organizzazione a cura di: prof. F. Benatti

Everyone interested in the topic is welcome to attend