

Abstract Submitted
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Quantum measurement reversal: Influence of finite detector efficiency¹ LONGFEI FAN, M. SUHAIL ZUBAIRY, Texas AM University — Amplitude-damping decoherence can be suppressed by applying a partial measurement and a reversal operation before and after the damping process respectively. In this scheme, environment is monitored to assist in discarding collapsed states. However, ideal detector efficiency is assumed in recent studies. Here we study the protection of single-qubit states and two-qubit entangled states under finite detector efficiency. A demonstration experiment setup based on linear optical system is described. Fidelity and concurrence are studied to evaluate the effect of the protection. We show that this scheme still works when the efficiency is large enough, however, its effect is weakened. Otherwise, it causes worse decoherence than that of states damping alone without any protection. A criterion of detector efficiency for deciding whether to apply this scheme is then given.

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