Entanglement evolution of continuous variable quantum states

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We show when one of the modes of a initially bipartite Gaussian pure state interacts with a Gaussian noisy channel $\uppercase\expandafter{\romannumeral1}\otimes \$$, the evolution of entanglement can be simply factorized by the product of two factors that depend on the environment and the initial state, respectively. These two factors are the entanglement quantity of the initial pure state and the entanglement quantity of the mixed state generated by performing the map $\uppercase\expandafter{\romannumeral1}\otimes \$$ on the maximal two-mode squeeze state.

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