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Statistical properties of a two-mode squeezed vacuum state in a single-mode amplitude-damping channel

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Abstract

In this paper, we propose a two-mode squeezing-mixed optical field, which can be generated by passing a two-mode squeezed vacuum state (TMSVS) through a single-mode amplitude-damping channel. We study the statistical properties of it by using the partial trace over one-mode (say a-mode or b-mode). It is interesting to find that the a-mode density operator is related to the amplitude-damping channel, but the b-mode density operator is not affected, as expected. The statistical properties of the a-mode quantum state are also discussed.

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Keywords: two-mode squeezed vacuum state; amplitude-damping channel; IWOP; partial trace method.

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