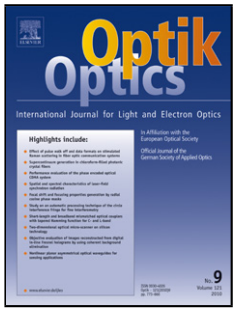

Title: Statistical properties of a two-mode squeezed vacuum state in a single-mode amplitude-damping channel

Authors: Gang Ren, Jian-ming Du, Wen-hai Zhang

PII: S0030-4026(17)31632-7
DOI: https://doi.org/10.1016/j.ijleo.2017.12.004
Reference: IJLEO 60126

To appear in:

Received date: 31-8-2017
Revised date: 24-11-2017
Accepted date: 5-12-2017

Please cite this article as: Ren G, Jian-ming D, Zhang W-h, Statistical properties of a two-mode squeezed vacuum state in a single-mode amplitude-damping channel, *Optik - International Journal for Light and Electron Optics* (2010), https://doi.org/10.1016/j.ijleo.2017.12.004

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

Gang Ren*, Jian-ming Du and Wen-hai Zhang

Department of Physics, Huainan Normal University, Huainan 232001, China

**Corresponding author:renfeiyu@mail.ustc.edu.cn*

August 31, 2017

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.

PACS: 0365−w 4250−p

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