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Entanglement structure of two-mode squeezed states in absorbing and amplifying environment PHOENIX S.Y. POON, C.K. LAW, Department of Physics and Institute of Theoretical Physics, The Chinese University of Hong Kong, Shatin, Hong Kong SAR, China — We examine the structure of entanglement for two-mode squeezed states interacting with symmetric linear baths [1]. In Fock space, ρ^{TA} is observed to be maintaining a block diagonal form as the system evolves. We explicitly obtain the eigenvalues and eigenvectors of ρ^{TA} (the partial transposition of density matrix ρ) as a function of time. The decoherence induced by the baths are shown to destroy the degeneracy of ρ^{TA} , leading to a set of eigenvectors for the construction of entanglement witness operators. We prove that the eigenvectors are time-independent, which is an indicator for the robustness of entanglement of two-mode squeezed states in the presence of noise.

[1] Phoenix S. Y. Poon and C. K. Law, Phys. Rev. A **76**, 012333 (2007).

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