Information Entropy Squeezing of a Two-Level Atom Interacting with Two-Mode Coherent Fields

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Abstract: From a quantum information point of view we investigate the entropy squeezing properties for a two-level atom interacting with the two-mode coherent fields via the two-photon transition. We discuss the influences of the initial state of the system on the atomic information entropy squeezing. Our results show that the squeezed component number, squeezed direction, and time of the information entropy squeezing can be controlled by choosing atomic distribution angle, the relative phase between the atom and the two-mode field, and the difference of the average photon number of the two field modes, respectively. Quantum information entropy is a remarkable precision measure for the atomic squeezing.

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