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Title: Quantum coherence and entanglement properties of photons in parametric down-conversion with quantized mixed pump

Abstract:

In non-degenerate parametric amplifier properties of down-converted photons (DCP) depend on nature of pump light beam. We study how a general structure of a state of a quantized mixed pump affects on quantum coherence and entanglement properties of DCP. We develop a new approximation method for calculation of measures of coherence, entanglement, and purity of DCP state. Applying our approximation method, we reveal an effect of a destructive interference-like pattern for coherence and entanglement measure of DCP state. We show that specific properties of a mixed pump state determine this effect. Also, we discuss possible schemes for observation of presented effect.