Multiphoton subtracted thermal states of light as a toy model in quantum optics

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Photon creation and annihilation are two basic operators in quantum optics. Their experimental implementation provides a perfect toolbox for quantum state engineering. The simplest quantum states of light, which can be modified both by photon creation and annihilation are thermal states. Therefore, the multiphoton subtracted thermal states (MPSTS) draw attention of quantum optics theorists and experimenters last decade. Despite its simplicity they serve as a good toy model for study of a number of quantum phenomena.

In the current work we give a theoretical description of MPSTSs [1] and experimental technique of their generation and measurement [2]. Next we experimentally explore their non-Gaussianity [3]. Further we show the recent results of multimode MPSTSs generation and measurement. Finally, we demonstrate, how to utilize MPSTSs for studding the “quantum vampire” effect [4].

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