Engineering Coherence and Entanglement via Photon Addition and Subtraction

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Abstract. Currently available sources produce fields in coherent states, thermal states and squeezed states. While such sources have proved to be of great use in a large number of applications, the current scenario in quantum information science requires sources with much broader classes of photon and quantum statistics. We will discuss how states with specific quantum features can be engineered by the process of photon subtraction and addition. In particular we show how, by photon subtraction and addition, coherence can be generated and how the amount of entanglement can be increased. We discuss applications of such engineered states to processes like teleportation of continuous variable states.

Keywords: entanglement, teleportation, continuous variables

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