Title:	Analysis of necessary and sufficient conditions for quantum teleportation with non-gaussian resources.
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Abstract:	Recent theoretical and experimental advances have demonstrated advantages of using non-Gaussian optical resources compared to the Gaussian ones in the context of quantum teleportation (QT), an important quantum information processing task. From both theoretical and experimental points of view the question of which attributes of the resources, besides entanglement, render them useful for QT is an important one. In this paper, we examine the question of whether two well-studied attributes of optical resources, viz., squeezed vacuum affinity (SVA) and Einstein-Podolsky-Rosen (EPR) correlation are necessary and/or sufficient for QT. The specific class of non-Gaussian resources that we have considered for this purpose are the two-mode entangled states generated by mixing nonclassical inputs with vacuum at the beam splitter (BS). Our analytical results show that SVA is not always nonzero and hence it cannot be considered to be a genuine attribute. Our numerical results show that there exist some BS-generated entangled states that do not give QT in spite of being EPR correlated, implying that EPR correlation is not sufficient for QT. In conjunction with the earlier observation in the literature to the effect that EPR correlation is not necessary for QT, our results lead to the conclusion that in general, EPR correlation is neither necessary nor sufficient for QT. Our results leave the question open as to what attributes, in general, may be necessary and/or sufficient for QT.
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