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Title:	Non-Gaussian operations in measurement-device-independent quantum key distribution.
Authors:	Singh, Jaskaran (/jspui/browse?type=author&value=Singh%2C+Jaskaran) Bose, Soumya Kanti (/jspui/browse?type=author&value=Bose%2C+Soumya+Kanti)
Keywords:	Quantum cryptography Quantum protocols Quantum optics
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Abstract:	Non-Gaussian operations in continuous variable (CV) quantum key distribution (QKD) have been limited to photon subtraction on squeezed vacuum states only. This is mainly due to the ease of calculating the covariance matrix representation of such states. In this paper we study the effects of general non-Gaussian operations corresponding to photon addition, catalysis, and subtraction on squeezed coherent states on CV measurement-device-independent (MDI) QKD. We find that non-Gaussianity coupled with coherence can yield significantly longer transmission distances than without. Particularly we observe that zero photon catalysis on the two-mode squeezed coherent state (TMSC) is an optimal choice for CV MDI QKD, while single photon subtraction is also a good candidate; both of them offer nearly 70 km of transmission distances. We also derive a single generalized covariance matrix for the aforementioned states which will be useful in several other aspects of CV quantum information processing.
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