

Multi-copy activation of genuine multipartite entanglement in continuous-variable systems

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Multi-copy activation of genuine multipartite entanglement (GME) is a phenomenon whereby multiple copies of biseparable but fully inseparable states can exhibit GME. This was firstly shown on isotropic GHZ states [1] and later proven to be generically possible in finite-dimensional systems [2]. We extend this analysis to infinite dimensions [3]. We provide examples of GME-activatable non-Gaussian states. For Gaussian states, we apply a necessary biseparability criterion for the covariance matrix [4] and show that it cannot detect GME activation. We further identify fully inseparable Gaussian states that satisfy the criterion but show that multiple and, in some cases, even single copies are GME. Thus, we show that the covariance-matrix biseparability criterion is not sufficient even for Gaussian states.

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- (2) Palazuelos, C.; de Vicente, J. I. *Quantum* **2022**, *6*, 735.
- (3) Baksová, K.; Leskovjanová, O.; Mišta Jr., L.; Agudelo, E.; Friis, N. *ArXiv* **2024**, *2312.16570*.
- (4) Hyllus, P.; Eisert, J. *New J. Phys.* **2006**, *8*, 51.