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Nonlinear squeezing and its decoherence

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Nonlinear squeezing is an important feature for universal quantum computing, that in principle enables universal control of a continuous variable system [1]. Simultaneously, it is a subject to current experimental effort [2,3,4]. We show its behaviour under decoherence and possibilities of protection by Gaussian operations [4]. Therefore, our results can enhance the ability to detect the nonlinear squeezing.

[1] Seth Lloyd et al., PRL 82, 1784 (1999)

[2] Shunya Konno, et al., Phys. Rev. Applied 15, 024024 (2021)

[3] Francesco Albarelli, et al., PRA 98, 052350 (2018)

[4] Yu Zheng, et al., PRX Quantum 2, 010327 (2021)

[5] Vojtěch Kala, Petr Marek, Radim Filip, arXiv:2107.06036 [quant-ph]

Primary author: KALA, Vojtěch (Palacký University Olomouc)

Co-authors: Prof. FILIP, Radim (Palacký University Olomouc); Dr MAREK, Petr (Palacký University Olomouc)

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