Abstract Submitted
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Entanglement measurements with propagating two-mode squeezed microwave states[1] S. POGORZALEK, K. G. FEDOROV, P. YARD, P. EDER, M. FISCHER, J. GOETZ, E. XIE, A. MARX, F. DEPPE, R. GROSS, Walther-Meissner-Institut, TU Muenchen, Nanosystems Initiative Munich (NIM) — Josephson parametric amplifiers (JPAs) can be employed for the generation of itinerant quantum signals in the form of propagating two-mode squeezed states (TMSSs), which are essential for quantum communication protocols [1]. Further applications of TMSSs include quantum information processing with continuous variables [2], or novel ideas of building quantum annealing networks based on JPAs [3]. All these fields make use of multiple JPAs for entanglement generation and manipulation, and therefore, require detailed knowledge of its physical properties. In our experiments, we employ two flux driven JPAs at the inputs of an entangling hybrid ring in order to generate two mode squeezing between the hybrid ring outputs. We perform tomography of the resulting TMSSs and experimentally investigate robustness of the entanglement to noise and finite-time delays. [1] R. Di Candia *et al.*, EPJ Quan. Tech. **2**, 25 (2015). [2] J. Yoshikawa *et al.*, Phys. Rev. Lett. **25**, 250501 (2008). [3] Puri *et al.*, arXiv:1609.07117 (2016).

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