

Abstract Submitted
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An integrated circuit for generating distributable and unconditional entanglement at microwave frequencies HSIANG-SHENG KU, University of Colorado at Boulder, FRANCOIS MALLET, JILA, WILLIAM F. KINDEL, University of Colorado at Boulder, KONRAD W. LEHNERT, JILA and NIST, KENT D. IRWIN, GENE C. HILTON, LEILA R. VALE, EMANUEL KNILL, SCOTT C. GLANCY, NIST, JILA TEAM, NIST TEAM — Entanglement, the unique feature of quantum mechanics, is the central resource of quantum information. In the strategy of continuous-variables quantum information processing, unconditional and distributable entanglement can be obtained by combining two squeezed states on a balanced beam splitter. Our group has recently demonstrated the generation of squeezed microwave states using a Josephson Parametric Amplifier [1] and implemented on-chip balanced beam splitters [2]. This talk will present a device that combines all these components on a single chip. The design requirements for such an “on-chip entangler” of the electromagnetic field modes will be discussed.

[1] M. A. Castellanos-Beltran et al, Nature Physics, 4, 929 (2008).

[2] Hsiang-Sheng Ku et al, arXiv:1010.3232v1

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