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Measuring on-chip distributable and unconditional entanglement at microwave frequencies FRANCOIS MALLET, HSIANG-SHENG KU, JILA, WILL KINDEL, SCOTT GLANCY, EMANUEL KNILL, KENT D. IRWIN, GENE C. HILTON, LEILA R. VALE, NIST, KONRAD W. LEHNERT, JILA — A squeezed mode of the light field exhibits reduced fluctuations, below the vacuum level, along one of its quadratures and conversely amplified fluctuations along the conjugate quadrature. In that sense, it is the electromagnetic analog of the particle states used by Einstein-Podolsky-Rosen to derive their famous paradox. Indeed, by combining two such squeezed modes on a balanced beam splitter, entanglement can be generated, in an unconditional and distributable way. Such experiments have been performed for some years at optical frequencies. This talk will present an experimental attempt to generate and characterize entanglement with squeezed light at microwaves frequencies, using superconducting electrical circuits. We will discuss the achieved degree of entanglement from the perspective of implementing quantum teleportation protocols at microwave frequencies.

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