

Abstract Submitted
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Solid-state quantum teleportation between nanomechanical modes L. TIAN, S. M. CARR, National Institute of Standards and Technology, 100 Bureau Drive, Stop 8423, Gaithersburg, MD 20899 — We study a quantum teleportation scheme between two nanomechanical modes without local interaction. The nanomechanical modes are connected by and linearly coupled to the continuous variable modes of a superconducting circuit made of transmission line and Josephson junctions. The phase sensitive measurement during the teleportation can be conducted by a superconducting single electron transistor operated as an rf mixer. Using a Wigner function approach, we calculate the fidelity of transferring coherent state under finite temperature and non-unit detector efficiency. We show that a fidelity above the classical limit of $1/2$ can be achieved for a large range of parameters.

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