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Controllable Coherent Transfer between a Superconducting Resonator and a Mechanical Oscillator TAUNO PALOMAKI, JENNIFER HARLOW, JOSEPH KERCKHOFF, REED ANDREWS, JILA, NIST and the University of Colorado, Boulder, JOHN TEUFEL, RAYMOND SIMMONDS, National Institute of Standards and Technology, Boulder, KONRAD LEHNERT, JILA, NIST and the University of Colorado, Boulder — We report experimental results of controllable coupling between a 7.5 GHz superconducting resonator and a 10 MHz mechanical oscillator. Through time domain measurements, we demonstrate controlled coherent energy transfer between these two systems. Furthermore, by utilizing a Josephson parametric amplifier we have been able to verify coherent transfer of small amplitude states. We compare these results to frequency domain measurements and discuss experimental limitations.

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