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Observation of Nonclassical Radiation Pressure Forces on a Mechanical Oscillator[1] JEREMY CLARK, FLORENT LECOCQ, RAYMOND SIMMONDS, JOSE AUMENTADO, JOHN TEUFEL, NIST Boulder — Squeezed states of light are known to be useful for enhancing mechanical displacement sensing since they can be tailored to reduce the "photon counting noise" that limits the measurement's noise floor. On the other hand, recent experiments in cavity optomechanics have reached measurement regimes where an interrogating light field exerts radiation pressure noise on a mechanical oscillator. One outstanding challenge has been to explore the intersection between such experiments. I will present data obtained using a superconducting cavity optomechanical system wherein a mechanical oscillator is driven by nonclassical radiation pressure imparted by squeezed microwave fields.

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