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Mechanical squeezing via parametric amplification and feedback control[1] ANDREW DOHERTY, Centre for Engineered Quantum Systems, University of Sydney, A. SZORKOVSZKY, G.I. HARRIS, W.P. BOWEN, Centre for Engineered Quantum Systems, The University of Queensland — We discuss the mechanical squeezing that can result from position measurement and feedback applied to a parametrically driven mechanical oscillator. If the parametric drive is optimally detuned from resonance, correlations between the quadratures of motion allow unlimited steady-state squeezing. This contrasts to a parametric drive alone, which is limited to 3dB of squeezing. Compared to back-action evasion, we demonstrate that the measurement strength, temperature and efficiency requirements for quantum squeezing are significantly relaxed.

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