

Abstract Submitted
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High-Bandwidth Force Sensing with Optical Cavities BENJAMIN RESCHOVSKY, AKOBUIJE CHIJIKE, National Institute of Standards and Technology — We present two methods for tracking high slew-rate, GHz-amplitude frequency shifts of optical cavities. We are motivated by the use of optical cavities for rapid ($\simeq 10$ kHz bandwidth) sensing of macroscale ($\simeq 100$ N) dynamic forces (e.g. impacts). The first method relies on a Pound-Drever-Hall frequency lock using feedback to a single-sideband modulator to achieve a large dynamic-range with fast locking bandwidth (> 1 MHz). The second method uses a dense frequency comb generated by an electro-optic modulator to simultaneously probe a wide ($\simeq 1$ GHz) frequency span.

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