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A Nanoelectromechanical Tunable Oscillator Base on a High-Q Optical Cavity

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Abstract : We developed a miniaturized tunable optomechanical oscillator based on the nanoelectromechanical systems (NEMS) technology, and its frequencies can be electrostatically tuned by as much as 10%. By taking both advantages of optical and electrical spring, the oscillator achieves a high tuning sensitivity without resorting to mechanical tension. In particular, the proposed high-Q optical cavity design greatly enhances the system sensitivity, making it extremely sensitive to the small motional signal.

Keywords : nanoelectromechanical systems (NEMS), nanotechnology, optical force, oscillator
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