

Abstract Submitted
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Coupling nanomechanical cantilevers to dipolar molecules¹ SWATI SINGH, MISHKAT BHATTACHARYA, OMJYOTI DUTTA, PIERRE MEYSTRE, B2 Institute, College of Optical Sciences and Department of Physics, University of Arizona — We investigate the coupling of a nanomechanical oscillator with ultracold dipolar molecules. We find theoretically that the cantilever can produce single-mode squeezing of the center-of-mass motion of an isolated trapped molecule and two-mode squeezing of the phonons of an array of molecules. This work opens up the possibility of manipulating dipolar crystals, and more generally, is indicative of the promise of nanoscale cantilevers for the quantum detection and control of atomic and molecular systems.

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