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Dissipation in suspended carbon nanotube oscillators[1] P. ALEX GREANEY, JEFFREY C. GROSSMAN, University of California, Berkeley — The vibrational properties of doubly clamped suspended single walled carbon nanotubes are studied numerically using continuum, and atomistic methods. Of interest is the dissipation of energy in athermally excited modes. Simple continuum arguments may be used to bound the limits of energy dissipation that arise due to the scale of the nanotubes; however, more detailed atomistic descriptions are required to capture the dissipation due to coupling between phonon modes. This work has implication for the use of carbon nanotubes as high frequency resonators in nanomechanical systems.

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