

Abstract Submitted  
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**Heat pumping in nanomechanical systems**<sup>1</sup> LILIANA ARRACHEA, Universidad de Buenos Aires, CLAUDIO CHAMON, Boston University, EDUARDO MUCCILOLO, University of Central Florida, RODRIGO CAPAZ, Universidade Federal de Rio de Janeiro — We propose using phonon pumping mechanism to transfer heat from a cold to a hot body. The mechanism is based on inducing a traveling modulation of the acoustic phonon velocity along the medium connecting the two bodies. This phonon pumping can cool nanomechanical systems without the need for active feedback. We have derived an estimate of the lowest achievable temperature. We have also analyzed this mechanism in the framework of simple one-dimensional microscopic models, which can be exactly solved with non-equilibrium Green function techniques.

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