Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Theory of phonon thermal conductivity of single-walled carbon nanotubes[1] L. LINDSAY, D. A. BROIDO, Department of Physics, Boston College, Chestnut Hill, MA 02467 USA, N. MINGO, CEA Grenoble , 17 Rue des Martyrs, Grenoble 38054, France — We have developed a Boltzmann transport approach to calculate the intrinsic lattice thermal conductivity of single-walled carbon nanotubes. Harmonic and anharmonic interatomic force constants are obtained from Brenner [1] and Tersoff [2] empirical potentials, while the full phonon Boltzmann equation is solved using an iterative scheme [3]. We employ symmetry based selection rules for anharmonic phonon-phonon scattering, and we include higher order anharmonicity in our examination of the phonon-phonon scattering for the acoustic modes. We compare our results to those obtained from other recent theoretical calculations [3, 4]. [1] D. Brenner et al., J. Phys. Condens. Matter 14, 783 (2002). [2] J. Tersoff, Phys. Rev. B 39, 5566 (1989). [3] N. Mingo and D. A. Broido, Nano Letters 5, 1221 (2005). [4] D. Donadio and G. Galli, Phys. Rev. Lett. 99, 25502 (2007).

[1](supported by the ACS Petroleum Research Fund)

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Date submitted: 21 Nov 2008 Electronic form version 1.4