

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Lattice Thermal Conductivity of Superlattices from an Adiabatic Bond Charge Model¹ ALISTAIR WARD, DAVID BROIDO, Boston College —

The adiabatic bond charge model (ABCM) has successfully rendered phonon dispersions of a host of bulk semiconductors [1,2] and has also been used to calculate the phonon dispersions in quantum well superlattices [3]. We have developed an ABCM for superlattices and combined it with a symmetry-based representation of the anharmonic interatomic forces to calculate the lattice thermal conductivity of short-period superlattices, using an iterative solution to the Boltzmann-Peierls equation [4]. We compare our ABCM results with those obtained from some commonly used models for the interatomic forces in semiconductors to assess the importance of accurate descriptions of the phonon dispersions in thermal conductivity calculations. [1] W. Weber, *Physical Review B* 15, 4789 (1977). [2] K. C. Rustagi and W. Weber, *Solid State Communications* 18, 673 (1976). [3] S. K. Yip and Y. C. Chang, *Physical Review B* 30 7037 (1984). [4] D. A. Broido, A. Ward, and N. Mingo, *Physical Review B* 72, 014308 (2005).

¹Petroleum Research Fund

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Date submitted: 19 Nov 2006

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