

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

**Calculation of Phonon Satellites in Electron Spectral**

**Functions**<sup>1</sup> SPENCER WILLIAMS, J.J. KAS, J.J. REHR, University of Washington, M. VERSTRAETE, Universite de Liege — We describe a first principles approach for calculations of phonon satellites in the electron self-energy and spectral function. The method is based on cumulant expansion techniques [1] applied to the self-energy model of Eiguren and Ambrosch-Draxl [2] with the dynamical matrix and electron-phonon couplings obtained from ABINIT [3]. In particular, the electron-phonon couplings are calculated from the Eliashberg functions as in [4], and the phonon DOS is obtained from a many-pole/Lanczos representation of the phonon Green's function [5]. The method is illustrated with results for a number of systems.

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<sup>1</sup>Supported by NSF Grant PHY-0835543.

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Date submitted: 13 Dec 2011

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