Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Raman response in density wave materials ELIZABETH NOWADNICK, ALEXANDER KEMPER, BRIAN MORITZ, THOMAS DEVEREAUX, Stanford University and SLAC — Raman spectroscopy, which uses different incoming and outgoing light polarizations to measure different areas of the Brillouin zone, allows researchers to probe the nature of charge and spin density wave gaps. We present calculations of the Raman response for two density wave materials: rare earth tri-tellurides in the charge density wave state and the iron pnictides in the spin density wave state. Both of these materials have phase diagrams which can be further understood by clarifying the nature of the density wave state. For example, in the tri-tellurides, either one or two charge density wave gaps are present depending on the type of rare earth element in the compound. In the pnictides, which we treat with a multiband model, superconductivity coexists with or is in close proximity to a spin density wave state. We discuss what can be learned from our calculations and compare to experimental results.

Elizabeth Nowadnick
Stanford University and SLAC

Date submitted: 19 Nov 2010 Electronic form version 1.4