Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Quasiparticle transport coefficients from a mean field bond density wave state in high-Tc cuprates GIRISH SHARMA, Clemson University, Clemson, SC 29634, USA, KANGJUN SEO, School of Natural Sciences, University of California Merced, Merced, California 95343, USA, SUMANTA TEWARI, Clemson University, Clemson, SC 29634, USA, COLLABORATION WITH K.SEO COLLABORATION — The pseudogap regime in low hole doped high Tc cuprate superconductors exhibits peculiar experimental signatures like the detection of enhanced negative signals for Hall, Seebeck and Nernst coefficients. This has been ascribed to a competing density wave order with superconductivity near 1/8 hold doping and low temperature regimes. Starting with a mean field quasiparticle model describing a bi-axial bond density wave (BDW) state with Q1 = (0, 2?/3) and Q2 = (2?/3, 0), we show that the Fermi surface is reconstructed with the emergence of electron and hole-like pockets in the Brillouin zone. Employing semi-classical Boltzmann dynamics, the emergence of an enhanced negative Hall, Seebeck and Nernst coefficients is shown which is consistent with experimental data. This type of response is not seen for a uni-axial BDW order of type Q1 or Q2.

Girish Sharma
Clemson University, Clemson, SC 29634, USA

Date submitted: 14 Nov 2014 Electronic form version 1.4