

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Spectral Weight Transfer in a Multi-Orbital Mott System** WEI-CHENG LEE, PHILIP PHILLIPS, Department of Physics, University of Illinois at Urbana-Champaign — One of the unique properties in a single band Hubbard model is the spectral weight transfer upon doping. Unlike in a Fermi liquid the redistribution of the spectral weights occurs predominantly near the chemical potential, a significant amount of spectral weights can be transferred from the high energy scales (upper Hubbard band) down to the chemical potential as a Mott insulator is doped. In this talk, we analyze the spectral weight transfer in a multi-orbital Mott system. We find that the spectral weights transferred from the high energy scales are greatly increased due to the multi-orbital structure, leading to a reduction of the critical doping level exhibiting zero thermopower. We argue that this indicates a suppression of the pseudogap phase and also predict the existence of new branches of charge  $2e$  bosons carrying spin 1 at low energy in a multi-orbital Mott system. Relevant experimental consequences will be discussed.

Wei-Cheng Lee  
Department of Physics, University of Illinois at Urbana-Champaign

Date submitted: 21 Nov 2010

Electronic form version 1.4