

Abstract Submitted
for the NWS10 Meeting of
The American Physical Society

Fermi Liquid Description of X-ray Absorption Spectra in Over-doped LSCO¹ TOWFIQ AHMED, JOHN J. REHR, JOSHUA J. KAS, University of Washington, TANMOY DAS, HSIN LIN, ROBERT S. MARKIEWICZ, BERNARDO BARBIELLINI-AMIDEI, ARUN BANSIL, Northeastern University, UNIVERSITY OF WASHINGTON COLLABORATION, NORTHEASTERN UNIVERSITY COLLABORATION — We show that a paramagnetic self-energy correction [1] to the real-space Greens function code FEFF9 [2] can provide a good description of the x-ray absorption spectra (XAS) of cuprate system such as $La_{2-x}Sr_xCuO_4$ (LSCO). This self-energy includes coupling to the both charge and magnetic excitations. We also find good agreement with recent XAS results of Peets *etal* [3] in the over-doped regime of LSCO. We have also investigated various prescriptions for including core-hole effects. We infer that at low-doping, the system behaves as an anti-ferromagnetic insulator, while Fermi liquid physics is recovered at high doping. [1] Tanmoy Das, R.S. Markiewicz, and A. Bansil, Phys.Rev. B **77**, 134516 (2008). [2] J.J. Rehr *etal.*, Comptes Rendus Physique **10**, 548 (2009). [3] D.C. Peets *etal.*, Phys. Rev. Lett **103**, 087402 (2009).

¹Supported by DOE BES Grant DE-FG03-97ER45623 and facilitated by the DOE CMSN.

Towfiq Ahmed
University of Washington

Date submitted: 21 Sep 2010

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