Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Doping Dependence of Resonant Inelastic X-ray Scattering (RIXS) in Electron and Hole-doped Cuprates[1] ARUN BANSIL, ROBERT MARKIEWICZ, Northeastern University, YINWAN LI, DONG QIAN, ZAHID HASAN, Princeton University — Resonant inelastic X-ray scattering (RIXS) can in principle access all intra- and inter-band transitions over a wide range of energies and momenta. For these reasons, RIXS is emerging as an important probe of Mott gap physics in strongly correlated materials. Here we discuss evolution of RIXS spectra in electron and hole doped cuprates within the framework of a three-band model Hamiltonian[1]. The theoretical predictions are compared and contrasted with the corresponding experimental results in NCCO and LSCO[2]. Interband (magnetic) transitions are found to shift to lower energy with increasing doping, while intraband features appear away from half-filling and spread over a wider energy range as the bandwidth grows with doping. Higher energy features arising from transitions deeper within the cuprate valence band complex will also be discussed. 1: R.S. Markiewicz and A. Bansil, cond-mat/0506474. 2: M.Z. Hasan, *et al.*, cond-mat/0406654.

[1]Work supported by the USDOE.

Arun Bansil
Northeastern University

Date submitted: 29 Nov 2005 Electronic form version 1.4