

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**RIXS Spectra for Ladder Cuprate  $Sr_{14}Cu_{24}O_{41}$**  W.M. AL-SAWAI, R.S. MARKIEWICZ, A. BANSIL, Northeastern University, Boston, MA 02115, L. WARRY, D. QIAN, M.Z. HASSAN, Department of Physics, Joseph Henry Laboratories, Princeton University, Princeton, NJ 08544 — The ladder compound  $Sr_{14}Cu_{24}O_{41}$  is of interest both as a quasi-one-dimensional analog of superconducting cuprates and as a superconductor in its own right when  $Sr$  is substituted by  $Ca$ . In order to model recent resonant inelastic x-ray scattering (RIXS) spectra of this compound, we studied the simpler  $SrCu_2O_3$  system in which the crystal structure contains very similar ladder planes. We approximated the LDA dispersion of  $SrCu_2O_3$  by two different tight-binding models - either a copper only model with two bands or a copper plus planar oxygen model with seven bands. Due to the glide symmetry of the structure, the period of dispersion along the ladder is  $4\pi$ . Strong correlation effects were treated by assuming an anti-ferromagnetic ground state for both models. The resulting dispersion of the filled band at half filling matches the experimental ARPES spectra, and the RIXS spectra are in good agreement with experimental results. Work supported in part by the USDOE

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Date submitted: 20 Nov 2006

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