Abstract Submitted
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Resonant Inelastic X-Ray Studies on the Cu-L edge in 1-Dimensional Cuprate Chains[1] JAMES LEE, M. YI, W.S. LEE, Stanford University, K. ZHOU, C. MONNEY, Swiss Light Source, PSI, S. JOHNSTON, J. VAN DEN BRINK, IFW Dresden, T. SCHMITT, L. PATTHEY, Swiss Light Source, PSI, T.P. DEVEREAUX, Stanford University, K. KUDO, Y. KOIKE, Tohoku University, Z.X. SHEN, Stanford University — Resonant Inelastic X-ray Scattering (RIXS) is a photon-in, photon-out spectroscopy technique with the capability of seeing many-body interactions in great detail. The recent achievement of sub-eV resolution in RIXS has opened up a new avenue for experiments to study these effects quantitatively. Here we present high-resolution RIXS data at the Cu L-edge on the quasi-one-dimensional edge-sharing chain compound, $Ca_{2+x}Y_{2-x}Cu_5O_{10}$, which is the only known dopable quasi-1D chain compound. Charge excitations corresponding to doped holes can be clearly resolved when the photon energy is tuned to the resonance at the hole band. In addition, we find that the d-d excitations appear to disperse with incident photon energy and momentum, and have a nontrivial intensity modulation. Effects of hole doping on these excitations will be discussed.

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