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Momentum-Resolved Cu K-edge RIXS Spectra in the Insulating Parent Compounds of High Tc Superconductors C-C. CHEN, B. MORITZ, Stanford University and SLAC, F. VERNAY, Paul Scherrer Institut, S. JOHNSTON, University of Waterloo and SLAC, J. HANCOCK, G. CHABOT-COUTURE, M. GREVEN, Stanford University and SLAC, I. ELFIMOV, G. A. SAWATZKY, University of British Columbia, T.P. DEVEREAUX, Stanford University and SLAC — Resonant inelastic X-ray scattering (RIXS) has the ability to highlight various many-body excitations that can be characterized by photon momentum transfer and energy loss. Exact Diagonalization calculations on small clusters were carried out to investigate the nature of the excitations seen in RIXS spectra in the parent compounds of high Tc superconductors. The model many-body calculation includes electronic orbitals necessary to highlight Zhang-Rice singlets, charge transfer and d-d excitations, as well as states with significant apical character. The influence of different orbitals on the RIXS spectra is studied, and the character of the excitations in different regions of the Brillouin zone is determined as well.

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