

Abstract Submitted
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Resonant inelastic x-ray scattering study at the oxygen K-edge of corner-shared Sr_2CuO_3 cuprate UMESH KUMAR, Department of Physics and Astronomy, University of Tennessee, Knoxville, USA, JUSTINE SCHLAPPA, European XRay FreeElectron Laser Facility GmbH, Hamburg, Germany, KEJIN ZHOU, Diamond Light Source, Harwell Science and Innovation Campus, Didcot, Oxfordshire, SURJEET SINGH, Indian Institute of Science Education and Research, Pashan, Pune, India , VLADIMIR STROCOV, Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland, ALEXANDRE REVCOLEVSCHI, Universit Paris-Sud, Orsay Cedex, France, HENRIK RNNOW, Ecole Polytechnique Federale de Lausanne (EPFL), Lausanne, Switzerland, STEVEN JOHNSTON, Department of Physics and Astronomy, University of Tennessee, Knoxville, USA, THORSTEN SCHMITT, Swiss Light Source, Paul Scherrer Institut, Villigen, Switzerland — We present a resonant inelastic x-ray scattering (RIXS) study at the oxygen K-edge of the spin-chain system Sr_2CuO_3 . We investigate this system using small cluster exact diagonalization calculations for a microscopic model that considers all the orbitals of Cu and O in CuO_3 -unit cell. Using a canonical parameter set, we compute the XAS and RIXS spectra in comparison to the experiment. This allows us to identify the *dd*- and charge transfer excitations in the observed spectrum. We also infer the presence of several low energy excitations that may be related to phononic and/or magnetic excitations.

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