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Polarization dependence of charge-transfer excitations in La_2CuO_4 LI LU, GUILLAUME CHABOT-COUTURE, Department of Applied Physics, Stanford University, Stanford, California 94305, JASON HANCOCK, Stanford Synchrotron Radiation Laboratory, Stanford University, Stanford, California 94309, OWEN VAJK, GUICHUAN YU, Department of Physics, Stanford University, Stanford, California 94305, KENJI ISHII, JUN'ICHIRO MIZUKI, Synchrotron Radiation Research Center, Japan Atomic Energy Research Institute, Hyogo 679-5148, Japan, DIEGO CASA, THOMAS GOG, CMC-CAT, Advanced Photon Source, Argonne National Laboratory, Argonne, Illinois 60439, MARTIN GREVEN, Department of Applied Physics, Stanford University, Stanford, California 94305 —
We have carried out an extensive resonant inelastic x-ray scattering (RIXS) study of La_2CuO_4 at the Cu K-edge. Multiple charge-transfer excitations have been identified using the incident photon energy dependence of the cross section and studied carefully with polarizations E//c and E //ab. An analysis of the incident photon energy dependence, the polarization dependence, as well as the K-edge absorption spectra, indicates that the RIXS spectra reveal rich physics about the K-edge absorption process and momentum-dependent charge-transfer excitations in cuprates.

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