

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

New Insights about the Strip Order in LBCO-1/8 by X-ray Natural Circular Dichroism JUNFENG HE, Boston College, K. SATO, Tohoku, K. TANAKA, Osaka, X.N. SUN, CNRS, I. KENJI, SPring-8, S.I. FUJIMORI, JAEA, F. WILHELM, ESRF, S. MOTOHIRO, N. KAWAMURA, SPring-8, M. FERNANDEZ, G. GU, Brookhaven, A. ROGALEV, ESRF, M. FUJITA, Tohoku, RUI-HUA HE, Boston College — Recent studies on LBCO-1/8 showed that the Kerr rotation of the infrared light polarization becomes non-zero below its charge stripe ordering temperature, and the sign of the Kerr rotation stays the same on opposite surfaces of the sample. This result has been interpreted as an evidence for a broken chiral symmetry of the stripe order. Such an interpretation is highly relevant to the nature of the broken symmetries that characterize the normal (pseudogap) state of cuprates as similar Kerr onsets have also been observed in several other cuprate families in the pseudogap state. Given its importance, insights from complementary experimental probes are required to shed new light on this issue. X-ray natural circular dichroism (XNCD), which measures circular dichroism in x-ray absorption, has been known as a useful probe for chirality of materials. Different from the Kerr effect, it is element-specific and predominantly measures a different part of the optical activity tensor that manifests a unique orientational dependence. We will present our first XNCD study of LBCO-1/8 as functions of the x-ray incident angle and temperature. A circular dichroic signal was observed within the stripe order state and shows a clear onset behavior. We will compare this result with the Kerr effect and neutron/x-ray diffraction results previously obtained on the same piece of sample.

Junfeng He
Boston College

Date submitted: 02 Dec 2013

Electronic form version 1.4