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Charge stripe ordering in LSCO and its comparison to LBCO and YBCO[1] VIVEK THAMPY, MARK DEAN, MIRIAN GARCIA-FERNANDEZ, CMPMSD, Brookhaven Natl Lab, USA, NIELS BECH CHRISTENSEN, Dept of Physics, Technical University of Denmark, Denmark, STUART WILKINS, JOHN HILL, CMPMSD, Brookhaven Natl Lab, USA — Charge stripe ordering has been shown to exist in several related members of the so-called 214 family, such as $La_{2-x}Ba_xCuO_4$ (LBCO) and $La_{2-x-y}Sr_xNd_yCuO_4$ (LNSCO), but had not previously been unambiguously observed in $La_{2-x}Sr_xCuO_4$ (LSCO). Using resonant soft x-ray and hard x-ray diffraction, we have observed a charge modulation in $La_{1.875}Sr_{0.125}CuO_4$ with a characteristic wave-vector close to that of the other 214 compounds. Recent reports suggested that this ordering occurs at the surface of LSCO. These results establish that it persists throughout the bulk of the sample. Despite the similar wave-vector, the evolution of the stripe order through the superconducting transition (T_C) in LSCO is different from LBCO and LNSCO, which show no change in the stripe ordering across T_C. In LSCO, on the other hand, the peak intensity is clearly suppressed below T_C and the correlation length stops growing. This bears similarity to what has been seen in $YBa_2Cu_3O_{6+y}$ of the 123 family, and could help establish a common motif to charge ordering between these two disparate families of superconducting cuprates. Finally, we show that despite these distinctions, the order parameter of the charge modulation in the three compounds is comparable in magnitude.

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