

Abstract Submitted
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Broken bond symmetry assists stripe pinning in superconducting $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ ¹ JOHN TRANQUADA, Brookhaven Natl Lab, H. JACOBSEN, U. Copenhagen, I.A. ZALIZNYAK, M. HUECKER, G.D. GU, BNL, A.T. SAVICI, B. WINN, ORNL, S. CHANG, NCNR — There has been evidence for quite some time for some degree of charge and spin stripe order in $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ (LSCO). This has been a bit surprising as the crystal structure is supposed to lack the anisotropic Cu-O bonds that lead to robust stripe pinning in $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$. Using neutron scattering measurements on the HYSPEC instrument at the Spallation Neutron Source, we have discovered evidence for broken bond symmetry and strong associated lattice fluctuations in an LSCO crystal with $x = 0.07$ [1]. The broken bond symmetry occurs within the orthorhombic phase. We also observe quasielastic incommensurate spin excitations that coexist with the bulk superconductivity, suggesting some degree of pair-density-wave order in the superconducting state.

[1] H. Jacobsen *et al.*, Phys. Rev. B (accepted); arXiv:1508.02429.

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