

Abstract Submitted
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Direct proof of static charge stripe correlations in $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ ¹
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— The nature of charge stripe order in the cuprates, and in particular whether the
stripes are static or dynamic, is a key issue in understanding the relationship be-
tween stripes and superconductivity. In $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$ (LBCO) a low temperature
structural distortion is widely believed to pin stripes into fixed, static domains, but
such an assertion has never been directly verified. We performed resonant soft x-ray
photon correlation spectroscopy (XPCS) to probe the charge order Bragg peak of
1/8 doped LBCO. At low temperatures, we observe time-independent x-ray speckle
patterns persisting for more than three hours, proving the static nature of the stripes
and we go on to discuss how stripe order melts with increasing temperature. Our
results demonstrate that the combination of XPCS with diffraction limited light
sources such as the National Synchrotron Light Source II can probe the dynamics
of even subtle order parameters such as stripes in the cuprates.

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