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[517] Charge order fluctuations in a stripe-ordered cuprate superconductor

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This study reports direct observation of charge order fluctuations in the unconventional superconductor $\text{La}_{1.675}\text{Eu}_{0.2}\text{Sr}_{0.125}\text{CuO}_4$ (LESCO) using resonant inelastic x-ray scattering (RIXS). Charge order is linked to and competes with superconductivity in cuprates, making its fluctuations key to understanding the low-energy physics in these materials. Past studies mainly focused on indirect methods, but this study uniquely separates out these fluctuations directly. We used numerical simulations to isolate charge order fluctuations from other low-energy signals. Our findings enhance the understanding of these fluctuations in superconductivity and introduce a new method for studying quantum materials.

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