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# 【105】Decoupled static and dynamical charge correlations in La2−xSrxCuO4

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The physics of charge order in high-temperature superconducting cuprates is still largely unexplained. Recent experiments revealed the presence of strong quantum fluctuations, whose doping and temperature dependence suggest the closeness to a quantum critical point and a relation to the strange-metal phase. We used ultra-high-resolution Resonant Inelastic X-ray Scattering in combination with uniaxial strain to investigate the stripe-ordered cuprate $La_{2-x}Sr_xCuO_4$. This allowed us to investigate the properties of the associated quantum fluctuations and phonon softening in an artificially detwinned striped state. We discover a clear connection between quantum charge fluctuations and bond-stretching phonons, and an apparent de-coupling between the static charge order and its fluctuations, which display a different symmetry.

**Author:** MARTINELLI, Leonardo (University of Zurich)

**Co-authors:** Dr LIN, Chun (University of Zurich); BIAŁO, Izabela (University of Zurich); CHOI, J. (Diamond Light Source); OPPLIGER, Jens; CHANG, Johan; ZHOU, Ke-Jin (Diamond Light Source); Dr ODA, M (Hokkaido University); GARCIA-FERNANDEZ, M. (Diamond Light Source); FISCHER, Mark; WANG, Qisi (The Chinese University of Hong Kong); Dr KUROSAWA, Tohru (Muroran Institute of Technology); HONG, Xunyang

**Presenter:** MARTINELLI, Leonardo (University of Zurich)

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