

SPECIAL COLLOQUIUM

Thursday, Feb. 14, 2019, 2:00 pm, RLM 11.204

Charge Density Wave Memory in a Cuprate Superconductor *$La_{2-x}Ba_xCuO_4$*

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Charge density wave (CDW) order is known to coexist with superconductivity in essentially all underdoped cuprates. Yet, its precise nature and the relationship with superconductivity is still unclear. Specifically, whether the CDW is static or fluctuating is a long-standing question whose answer will provide deep insight into whether the CDW order competes or cooperates with superconductivity. In the first part of my talk, I will show with coherent x-ray diffraction, that CDW domains in underdoped cuprate $La_{2-x}Ba_xCuO_4$ (LBCO) are surprisingly static, with no evidence of significant fluctuation well into the superconducting state. Is the static nature of CDW order in LBCO universal for all underdoped cuprates? Motivated by this question, I will discuss in the second part of my talk, the CDW pinning mechanism in LBCO. By tracking the history of CDW domain textures upon

thermal cycling, we have found an unexpected pinning mechanism.

Finally, I would like to end my talk by diving into the exciting world of coherent x-ray physics and discuss its capability for current and future research.

