Seminar

Precursor charge density wave in $La_{1.875}Ba_{0.125}CuO_4$

Dr. Hu Miao ( )

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: 2016 9 29 4:00

Venue: w563, Physics building, Peking University

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Abstract

The observation of charge density wave (CDW) order in numerous different samples has provided increasing support to the concept that CDW correlations are an intrinsic property of the high temperature superconducting cuprates. It has long been hypothesized that this order arises from the pinning of precursor high-temperature CDW fluctuations, but while precursor spin density wave (SDW) correlations have been studied in detail, the corresponding transition between pinned and precursor CDW correlations has never been observed. Here, using resonant inelastic x-ray scattering (RIXS), we report the discovery of such correlations above the nominal CDW transition in La1.875Ba0.125CuO4. The precursor CDW has a correlation length of a few unit cells and exists decoupled from the SDW. We find that the CDW and SDW correlations lock together at low temperature reconciling the apparently different properties of the CDW in different cuprates.

About the Speaker