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(I) Vanishing nematic order beyond the pseudogap phase in overdoped cuprate superconductors

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During the last decade, translational and rotational symmetry-breaking phases —density wave order and electronic nematicity —have been established as generic and distinct features of many correlated electron systems, including pnictide and cuprate superconductors. However, in cuprates, the relationship between these electronic symmetry-breaking phases and the enigmatic pseudogap phase remains unclear. In this talk, I will discuss our efforts to employ resonant x-ray scattering in a cuprate high-temperature superconductor (Nd-LSCO) to probe the relationship between electronic nematicity, charge order, and the pseudogap phase. We find evidence for a considerable decrease in electronic nematicity beyond the pseudogap phase, either by raising the temperature through the pseudogap onset temperature T^* or increasing doping through the pseudogap quantum critical point, p_c . These results establish a clear link between electronic nematicity, the pseudogap, and its associated quantum criticality in overdoped cuprates. Our findings anticipate that electronic nematicity may play a larger role in understanding the cuprate phase diagram than previously recognized.

Author: HAWTHORN, David (University of Waterloo)

Presenter: HAWTHORN, David (University of Waterloo)

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