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Materials Science and Technology Division

“Defects in correlated electron systems: from magnetic droplets to disordered stripes”

Peter Hirschfeld
University of Florida

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11:00 a.m.
SNS/8600, Iran Thomas Auditorium

Abstract:

Localized potentials in interacting electron systems induce strong magnetic correlations in their vicinity, creating droplets of staggered magnetization which carry a net moment.

In spin chains, the properties of such defect-induced droplets can be calculated exactly and are sometimes quite unexpected. In higher dimension, approximate methods must be used, but the picture which emerges is quite similar to the 1D case. When many impurities are present, localized magnetic states interfere and can lead to "order by disorder" behavior.

All these phenomena are observable in experiments on underdoped cuprate superconductors and shed light on recent discussions of novel types of order competing and/or coexisting with d-wave superconductivity. I will focus in particular on recent scanning tunneling experiments which may be influenced by these phenomena.

Host: Elbio Dagotto (574-2592)

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