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Mapping Electron Waves in High Temperature Superconductors

Abstract:

High temperature superconductivity in the cuprates continues to be one of the main challenges facing condensed matter physics today. After many years of effort in both experiment and theory there are still a number of unanswered questions about the nature of electronic states in these materials. Using the scanning tunneling microscope, we have the capability to directly map the electronic states in these compounds and address some of these questions. At the center of the debate is the possibility that in addition to superconductivity and antiferromagnetism, these compounds may exhibit other type of ordering phenomena, such as those associated with spin, charge density waves, or orbital currents. In this talk I will focus on recent experimental evidence that strongly suggest that electronic state can indeed spatial organize in these compounds. I will describe these experiments as well as the experimental technology that we have developed to make them possible.

Thursday, February 22, 2004  
3:30 pm Lecture Room 1-200  
Refreshments immediately following in Room 2-222 (Leonard Lounge)