

**SEEING IS BELIEVING –
VISUALIZATION OF NANOSCALE
ELECTRONIC PHASES IN
QUANTUM MATERIALS**

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Thursday, March 29, 2012

4:00 P.M. ❖ 118 NSH

(Refreshments at 3:30 P.M. NSH 202)

Complex quantum materials are characterized by their exotic phase diagrams, emergent physical phenomena, extreme electromagnetic properties, and enormous application potential. In order to study the novel electronic phases inherently present in these systems, we developed a scanning probe microscope to resolve the nanoscale dielectric properties. In a manganite thin film, the magnetic-field induced orientation-ordered percolation network was visualized, indicating the strain effect as the dominant role in the metal-insulator transition. The microscope can also map out the alternating metallic and insulating edge strips of a two-dimensional electron gas in the quantum Hall regime. Continuous research effort in this area is expected to impact many areas of condensed matter physics, including multiferroics, topological insulators, and metamaterials.

Colloquium

All interested persons are cordially invited to attend.