

TEL: 225-578-2261
FAX: 225-578-5855
<http://www.phys.lsu.edu>

202 NICHOLSON HALL
Louisiana State University
Baton Rouge, Louisiana 70803-4001

WEEKLY CALENDAR

April 7, 2008

Departmental Colloquium

“Strands of Superconductivity at the Nanoscale”

3:40 PM – Thursday, April 10, 2008

109 Nicholson Hall

Paul M. Goldbart

Department of Physics & Frederick Seitz Material Research Laboratory, University of Illinois, Urbana-Champaign

Host – Daniel Sheehy

•Refreshments served at 3:15 PM in 201 Nicholson Hall•

Superconducting circuitry can now be fabricated at the nanoscale by depositing suitable materials on to individual molecules, such as DNA or carbon nanotubes. In this talk I shall examine various themes that arise when superconductivity is explored in this new regime, including thermal barrier crossing and quantum tunneling by the superconducting condensate, as well as the impact of magnetism on nanosuperconductivity. I shall focus on a fascinating class of circuits: nanoscale superconducting quantum interference devices (or n-SQUIDs). After describing how they are made, I shall pay particular attention to the electrical resistance of these devices and, especially, its sensitivity to magnetic fields and patterns of supercurrent. These features hint at possible uses of n-SQUIDs, such as for mapping the quantum phase of superconducting order and testing for superconducting correlations in novel materials and settings.

Materials Science and Engineering Seminar

“Quantum Critical Phenomena in Correlated Electron Systems ”

3:40 pm – Monday, April 14, 2008

435 Nicholson Hall

Rongying Jin

Oak Ridge National Laboratory

Host: Dana Browne

Research on correlated electronic materials has uncovered many novel physical properties that present an outstanding challenge for theoretical and experimental physicists. Puzzling new behavior develops around the precarious point of instability between two stable phases of matter - the quantum critical point. In my talk, I will give a couple of examples, showing how to promote the formation of new quantum phases by explicitly tuning systems toward special low-temperature quantum critical points.

Welcome To:

Dr. Yimin Xiong, a Postdoctoral Researcher with Dr. Philip Adams. He is in Room 210-A, 578-7967.

Publication:

“Fundamental Decoherence from Quantum Gravity,” Roldo Gambini, Rafael orto and **Jorge Pullin**, Proceedings of the 2nd International Conference on Time and Matter, 26-31 August 2007, Bled, Slovenia.