



PHYSICS & ASTRONOMY WEEKLY CALENDAR

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WEEKLY CALENDAR

May 5, 2008

Materials Science and Engineering Seminar

"STM measurements of bosonic excitations in cuprates: clues to the paring mechanism"

3:40 PM – Wednesday, May 7, 2008

109 Nicholson Hall

**Vidya Madhaven
Boston College**

Host – John DiTusa

Measurements of bosonic modes in high temperature superconductors provide critical information necessary to decipher the puzzle of the pairing mechanism in the cuprates. In this talk, I will discuss our recent STM investigations of the electron-doped cuprate superconductor $\text{Pr}_{0.88} \text{LaCe}_{0.12} \text{CuO}_{4.8}$ (PLCCO) ($T_c = 24$ K). Our spectra reveal superconducting gaps with coherence peaks that disappear above T_c . In addition, multiple step/peak-like features are observed outside the gap. Such features in STM spectra are suggestive of bosonic excitations that couple strongly to the electrons. The energy scale of our mode is the same as the magnetic resonance mode (spin-excitations) in PLCCO measured by inelastic neutron scattering but is also consistent with a low energy acoustic mode. Additionally, I will show that both the local mode energy and the intensity reveal correlations with the local gap energy scale. The sensitivity of the mode intensity to the energy scale of the onset of the continuum of excitations (2Δ) may indicate an electronic origin rather than phonons. Finally I will discuss this data in the context of neutron scattering and STM measurements on other cuprate compounds.

Special Seminar

"Enabling Gravitational-wave Astronomy On The LIGO Data Grid"

**3:40 pm – Monday, May 5, 2008
338 Johnston Hall**

**Patrick Brady
University Of Wisconsin At Milwaukee**

Host: Gabriela Gonzalez

The Laser Interferometer Gravitational-wave Observatory (LIGO) generates about 0.5 peta-bytes of data each year of observation. While the gravitational-wave channel represents only about 1% of this data, the analysis challenges are computationally formidable. LIGO has adopted a computational model which uses resources distributed around the world and organized into the LIGO Data Grid. I will describe the tools, services, and methodologies used to enable gravitational-wave astronomy on this distributed facility. I will also outline some of the analysis and computational challenges that face LIGO as we move into the enhanced and advanced eras.

Welcome To:

Dr. Christian Buth, a Postdoctoral Researcher with Professor Kenneth Schafer. He is located in Room 222A, Extension 8-0597.

Congratulations To:

Marlan Scully, adjunct professor of physics, who has been elected to the American Academy of Arts and Sciences. <http://www.amacad.org/news/classes2008.aspx>.

Announcement:

Boyd Professor Joseph Callaway was honored posthumously as one of four new inductees into the College of Basic Sciences Hall of Distinction. The announcement can be found at <http://app1003.lsu.edu/UNV002.nsf/PressReleases/PR4962?OpenDocument>.

Reminder:

Faculty Meeting Tuesday, May 6, 2008 at 3:40 p.m. in Room 109.