



College of
Science
Department of Physics
& Astronomy

WEEKLY CALENDAR

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

November 11 - 15, 2013

DEPARTMENTAL COLLOQUIUM

"Black Hole Curiosities"

3:30 PM November 14, 2013
109 Nicholson Hall

Pablo Laguna

Georgia State University

Host: Parampreet Singh

• Refreshments served at 3:10 PM in 232 (Library) Nicholson Hall •

Numerical relativity has opened the door to unveil phenomena of strong dynamical gravity. I will present results from three studies of black holes that have been only possible thanks to state of the art computational tools and powerful computer hardware.

Saturday Science at LSU

November 16, 2013

10:00 A.M.

130 Nicholson Hall, LSU

"Search for Gravitational Waves"

Thomas Corbitt

LSU Dept. of Physics and Astronomy



Fall Seminar

Jiang Wei

Tulane University

"Nanostructure engineering: probing phase transition and unexpected hydrogen storage in single-crystal vanadium dioxide micro/nanobeam"

3:30pm - 4:30pm, Wednesday, November 13, 2013
1008B, Digital Media Center, Louisiana State University

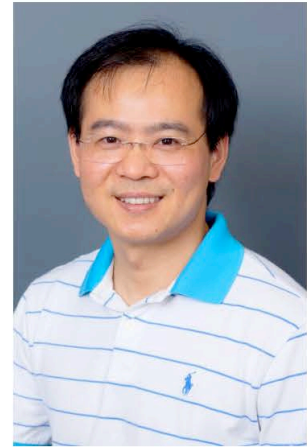


Fall Seminar
3:30pm - 4:30pm, Wednesday, November 13, 2013
1008B, Digital Media Center, Louisiana State University

Nanostructure engineering: probing phase transition and unexpected hydrogen storage in single-crystal vanadium dioxide micro/nanobeam

By
Jiang Wei
Tulane University

Many strongly correlated electronic materials have a domain structure that greatly influences the bulk properties and obscures the fundamental properties of the homogeneous material. Nanoscale samples, on the other hand, can be smaller than the characteristic domain size, thus making it possible to explore these fundamental properties in detail. Here, I will describe some new aspects of the metal-insulator transition, studied in single domain vanadium dioxide nanobeams, including supercooling of the metallic phase by 50C, the new activation energy of insulating phase consistent with the optical gap, and a connection between the metal-insulator transition and the equilibrium carrier density in the insulating phase. Our devices also provide a nanomechanical method for determining the transition temperature, enable measurements on individual metal-insulator interphase walls to be made, and allow general investigations of phase transitions in quasi-one dimensional geometries. As a direct application of such scheme, we discovered that vanadium dioxide nanobeam can be reversibly intercalated with atomic hydrogen, which stabilizes the strongly correlated metallic phase down to cryogenic temperature. The maximum hydrogenation can reach HVO₂.



Jiang Wei - Dr. Jiang Wei received his PhD (physics) from University of Washington at Seattle in 2010. After that he was awarded Attwell-Welch Fellowship working with Dr. Douglas Natelson as a postdoctoral researcher in Smalley Institute of Rice University. In 2012, He joined the Department of Physics and Engineering Physics at Tulane University as a tenure-tracked professor. His current research focuses on electron transport and micro-spectroscopy study on nanostructured strongly correlated materials and low dimensional semiconducting materials.

UNO - Liberal Arts Building 234 ~ **LATech** - PML 1015, Center for Instructional Technology, at the Wylly Tower

Note, this seminar will ONLY be available via abobe connect <http://connect.lsu.edu/la-sigma/>

