



College of
Science
Department of Physics
& Astronomy

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Weekly Calendar

April 27-May1, 2015

Departmental Colloquium

"Direct Detection of Dark Matter: From Microphysics to Observational Signatures"

3:30 PM Thursday, April 30, 2015

119 Nicholson Hall

James B. Dent

University of Louisiana - Lafayette

HOST: James Matthews

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

Dark matter has an abundance that is roughly five times that of ordinary, Standard Model matter. In this talk I will review the evidence pointing towards the existence of dark matter, and describe the various current efforts devised to discern its particle nature. I will specifically detail recent theoretical investigations that I have been involved in which attempt to provide general frameworks for interpreting possible future detections of dark matter. I will also describe the complementary approaches of collider searches for dark matter, such as those performed at the LHC, and astrophysical probes of dark matter annihilations or decays.

Special Seminar:

Louisiana Consortium for Neutron Scattering

"Studies of Strongly Correlated Electron Systems Using Neutron Scattering"

Monday, April 27, 2015, 3:00-4:00 pm

1008B Digital Media Center, LSU

Yuen Yiu

University of Tennessee, Oak Ridge National Laboratory



Spring Seminar

Doug Natelson

Rice University

"TBA"

3:00pm, Wednesday, April 29, 2015

600 Lindy Boggs, Tulane University

Publications:

1. "Reducing the Cost of Proton Radiation Therapy: The Feasibility of a Streamlined Treatment Technique for Prostate Cancer," **Wayne D. Newhauser**, Rui Zhang, Timothy G. Jones, Anelise Giebler, Phillip J. Taddei, Robert D. Stewart, Andrew Lee and Oleg Vassiliev, *Cancers* 2015, 7, 688-7051 doi:10.3390/cancers 7020688.



Monday, April 27
3:00-4:00pm
1008B Digital Media Center
Louisiana State University

Studies of Strongly Correlated Electron Systems Using Neutron Scattering

Condensed Matter Physicists strive to continue to solve the puzzles at the frontier of material research. We look at 3 separate materials and present results of the studies from neutron scattering experiments.

First is an investigation of phase transitions in Ru/Fe substituted PrFeAsO . PrFeAsO is a member of the 1111 family of iron pnictides, in which superconductivity can usually be induced by suppressing the magnetic and structural transitions via carrier doping. We have used Neutron Powder Diffraction to investigate the effect of isoelectronic substitution on these transitions in Ru/Fe substituted PrFeAsO .

Second is the study of the helimagnetic ordering in Cr doped FeGe . Both CrGe and FeGe are in the B20 cubic structure, where CrGe exhibits no long range magnetic order down to at least 2K, and FeGe orders helimagnetically at 280K. We use Small Angle Neutron Scattering to study the doping dependence of helimagnetism of Cr doped FeGe .

Finally, we examine the lattice dynamics in the rocksalt structure compounds: UC and US. A recent inelastic neutron scattering experiment has revealed quantum harmonic oscillator behavior of N atoms in UN. We deduce that other uranium rocksalts should also exhibit such behaviors. We use Time-Of-Flight Inelastic Neutron Scattering to extend the study on the dependence of quantum harmonic oscillations in uranium rock salts.

SEMINAR SERIES



Guest Speaker

YUEN YIU

Graduate Research
Assistant in
Condensed Matter
Physics

University of
Tennessee / Oak
Ridge National Lab

Free and open to the public



www.physics.lsu.edu/lacns

