

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

October 20, 2008

Department Colloquium

"Doing Condensed Matter Physics with Ultracold Atomic Gases"

3:40 PM, October 23, 2008
109 Nicholson Hall

Victor Gurarie
University of Colorado
Host: Daniel Sheehy

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

A few years ago several experimental breakthroughs created a new interdisciplinary field. It combines atomic physics with condensed matter physics, and promises to manufacture new states of matter with constituents which are custom-picked atoms whose interactions can be manipulated at will. Since then the field has witnessed a number of remarkable successes, such as creating an artificial "high temperature" superconductor, observing an artificially prepared superconductor-insulator transition, and creating an artificial "magnet". At the same time, a number of far fetching predictions about the future successes in the field so far failed to materialize. I will discuss the successes and setbacks of the field, and describe how future successes can only be achieved by cleverly combining the vision coming from condensed matter physics and realistic limitations imposed by atomic physics.

Publications:

"Development of a high resolution isobar separator for study of exotic decays," **A. Piechaczek**, V. Shcepunov, H.K. Carter, J.C. Batchelder, **E.F. Zganjar**, S.N. Liddick, H. Wollnik, Y. Hu and B.O. Griffity, Nuclear Instruments and Methods in Physics Research B 266 (2008) 4510-4514.

"Development of the High Altitude Student Platform," **T.G. Guzik**, S. Besse, A. Calongne, A. Dominique, **S.B. Ellison**, **R. Gould**, **D. Granger**, **D. Olano**, **D. Smith**, **M. Stewart**, and **J.P. Wefel**, Advances in Space Research 42 (2008) 1704-1714.