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

October 15, 2007

Departmental Colloquium

"Light Beams with a Twist"

3:40 PM - Thursday, October 18, 2007

109 Nicholson Hall

Surenda Singh

University of Arkansas

Host – Jonathan Dowling

• Refreshments served at 3:15 PM in 229 Nicholson Hall •

Laser beams are wave-like solutions of Maxwell's equations with finite transverse extent. In addition to carrying momentum and energy, they can carry intrinsic (spin) as well as orbital angular momentum. Most lasers, however, emit the familiar Hermite-Gauss (HG) light beams that carry zero orbital angular momentum. Such laser beams have planar or spherical phase fronts. These beams can be transformed into Laguerre-Gauss (LG) family of laser beams that have twisted phase fronts. LG beams can carry nonzero orbital angular momentum and are examples of optical beams that may be described as optical vortices. Experimental realization of this scheme will be described and examples of such transformation of HG beams into LG beams will be presented and results of interference and polarization experiments revealing their fascinating phase and polarization properties will be discussed.

Welcome To:

Dr. Cristina Torres, a Postdoctoral Researcher with Dr. Gabriela González. She is in Room 268 Nicholson, 8-8186

Congratulations To:

Dr. Ken Hogstrom, who has been appointed as the holder of the Dr. Charles M. Smith Chair of Medical Physics. The LSU press release can be found at <http://appl003.lsu.edu/UNV002.nsf/PressReleases/PR4625?OpenDocument>.

Dr. Joel Tohline who has been invited to serve a 3 year term on the National Science Foundation's Directorate of Math & Physical Sciences Advisory Committee (MPSAC). The MPSAC is the only official advisory body to the Divisions within the Math and Physical Sciences Directorate, and the Directorate relies on the AC for both high level advice and connection to the community. More information on the MPSAC can be found at <http://www.nsf.gov/mps/advisory.jsp>.

Publication:

"Loop quantization of spherically symmetric midi-superspaces," Miguel Campiglia, Rodolfo Gambini and **Jorge Pullin**, Class. Quantum Grav. 24 (2007) 3649-3672.

