

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

September 8, 2008

### Department Colloquium

"Sudden death of an entanglement, its avoidance, and associated geometries"

3:40 PM, September 11, 2008  
109 Nicholson Hall

*A. Ravi P. Rau*

LSU – Department of Physics and Astronomy  
Host: Juhan Frank

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

A key resource in the field of quantum information (an umbrella term for quantum computing, cryptography and teleportation) is "entanglement" of two spin-1/2 systems. Dissipation and decoherence are inevitable in any physical system and, as with other properties, can be expected to degrade entanglement. A particularly insidious result was pointed out and recently experimentally demonstrated, of entanglement undergoing a "sudden death". I will discuss this, as well as propose ways to avoid it through simple operations that each spin sub-system can make. A more general context of geometrical visualization of a pair of spins, including a generalization of the Bloch sphere picture familiar for a single spin, and links to octonions, projective geometry and "Design Theory" (a branch of mathematics born in British India) will also be presented.

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### Astrophysics Seminar

"Verification of the two-body spin precession general relativistic result in the double binary system and discussion of 1-body experiments such as gravity probe B, etc."

12:10 – 1:00 PM, September 16, 2008  
262 Nicholson Hall

*Robert O'Connell*

LSU – Department of Physics and Astronomy  
Host: Bradley Schaefer

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### Reminder:

There will be a Faculty Meeting on Wednesday, September 10, 2008 at 3:40 p.m. in Room 435 Nicholson.

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### Publications:

"The dynamics of general relativity," J. Pullin, Gen. Relativity Gravity 40: 1989-1995, 2008.

"Independent Measurement of the Total Active 8B Solar Neutrino Flux Using an Array of 3He Proportional Counters at the Sudbury Neutrino Observatory," The SNO collaboration... J.T.M. Goon, ... T. Kutter... PRL 101, 111301 (2008).