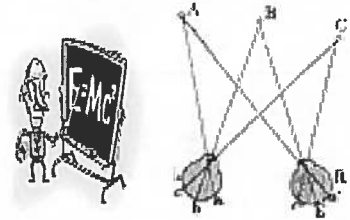




WEEKLY CALENDAR



Department of Physics and Astronomy
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Baton Rouge,, Louisiana 70803-4001

April 16, 2007

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GENERAL SEMINAR

"Minimum Energy Requirements for Quantum Computing"
"Nonlinear and Quantum Optical Effects in Microrings and Things"

3:40PM / Thursday, 19 April 2007 / Room 109
[Refreshments served at 3:15 PM in Room 229 Nicholson]

Host: Dr. Jonathan Dowling
Julio Gea-Banacloche, Ph.D.
University of Arkansas

Under most circumstances, an elementary quantum logical operation on a qubit requires a minimum amount of energy which is inversely proportional to the acceptable error probability. This has been most extensively studied for atomic systems interacting with an electromagnetic-pulse control field, with the generic result that the error probability scales as the inverse of the number of photons in the (quantized) pulse, as long as the pulse is in a coherent state. I will discuss the physical reasons for this phenomenon and present an intriguing new result that shows that minimum-energy pulses cannot, in general, be shared by several atoms without increasing the per-atom error probability.

Material Science and Engineering Seminar

"Micro- and Nano- Crystalline Diamond films"
3:40PM / Wednesday, 18 April 2007 / Room 109
Host: Dr. John DiTusa, Physics/ Jayne Garno, Chemistry

Greg Swain, Ph.D.
Michigan State University

Publications:

"Quantum thermodynamic functions for an oscillator coupled to a heat bath," G. W. Ford and R.F. O'Connell, Physics Review B 75, 134301 (2007).

E. F. Zganjar et. al., "Superallowed Beta Decay Studies at TRIUMF – Nuclear Structure and Fundamental Symmetries," Acta Phys. Pol. B 38, 1179 (2007).