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WEEKLY CALENDAR

March 5-9, 2012

DEPARTMENTAL COLLOQUIUM

"Quantum Gravity, and the Observable Universe"

3:40 PM, March 8, 2012
109 Nicholson Hall

Ivan Agullo
Pennsylvania State University

Host: Jorge Pullin

• *Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall* •

An important difficulty in the search for a satisfactory theory of quantum gravity is the absence of experimental guidance. The astonishing improvement in cosmological observations attained in the last few years offers an exiting opportunity to change this situation. It is believed that the inhomogeneities present in the CMB and in the distribution of galaxies originated in the very early universe. Observing their details could therefore tell us about physics in such extreme conditions. In this talk, I will review the physics of the genesis of cosmic non-uniformities, paying special attention to the interplay between quantum effects and gravitation. I will describe how the forthcoming observations could provide detailed information about processes where the relationship between gravity and quantum mechanics plays a crucial role.

PUBLICATIONS:

1. "Dynamical decoupling in optical fibers: Preserving polarization qubits from birefringent dephasing," **Bhaskar Roy, Bardhan, Petr M. Anisimov, Manish K. Gupta, Katherine L. Brown, N. Cody Jones, Hwang Lee, and Jonathan P. Dowling**, Physical Review A, Vol 85 (28 FEB 2012) Art. No. 022340.
2. "Discretisations, Constraints and Diffeomorphisms in Quantum Gravity," Benjamin Bahr, Rodolfo Gambini and **Jorge Pullin**, Symmetry, Integrability and Geometry: Methods and Applications 8 (2012), 002, 29 pages.