**INVITADO**: Philipp Schindler, Institute for Experimental Physics, University of Innsbruck (Austria)

**TITULO**: Experimental quantum computation with trapped ions

**LUGAR**: FACULTAD DE CIENCIAS FÍSICAS UCM
**DÍA**: 12 Enero, 2012 (Jueves)
**HORA**: 14:30 horas
**AULA**: Seminario Depto. Física Teórica I, Planta 3ª


**ABSTRACT**

Nowadays it is widely known that a quantum computer can solve certain problems more efficient than any classical computer. In the group of Prof. Rainer Blatt in Innsbruck we try to realize such a quantum computer with the aid of trapped Ca+ ions. In the last year quantum state manipulation of a few trapped ions has evolved beyond the set of coherent universal quantum operations towards an efficient toolbox covering also dissipative processes. In this talk I will introduce our toolbox and talk about experiments in the field of quantum computation and quantum simulation. More specifically I will talk about the demonstration of repetitive quantum error correction [1] and the implementation of first steps towards a universal quantum simulator for open quantum systems [2].



[1] Experimental repetitive quantum error correction, P. Schindler et al, Science 332, 1059 (2011)
[2] An open-system quantum simulator with trapped ions, J. T. Barreiro, M. Müller et al, Nature 470, 486 (2011).