

SEMINARIO
Departamentos de Física Teórica I y II
Universidad Complutense de Madrid

CONFERENCIANTE: Eduardo Martín-Martínez

Institute for Quantum Computing, University of Waterloo, Canada

TITULO: Quantum field entanglement farming: Harnessing relativistic effects in non-relativistic settings

LUGAR: FACULTAD DE CIENCIAS FÍSICAS UCM

DÍA: 23 de julio, 2014 (Miércoles)

HORA: 14:30

AULA: Seminario Depto. Física Teórica I, Planta 3ª

ABSTRACT:

We show that in certain generic circumstances the state of light of an optical cavity traversed by beams of atoms is naturally driven towards a non-thermal metastable state. This state can be such that successive pairs of unentangled particles sent through the cavity will reliably emerge significantly entangled thus providing a renewable source of quantum entanglement. Significant for possible experimental realizations is the fact that this entangling fixed point state of the cavity can be reached largely independently of the initial state in which the cavity was prepared. Our results suggest that reliable entanglement farming on the basis of such a fixed point state should be possible also in various other experimental settings, namely with the to-be-entangled particles replaced by arbitrary qudits and with the cavity replaced by a suitable reservoir system. In the case of the cavity this effect is possible through the build-up of small relativistic effects.