DE MADRID AL COSMOS

Phase Space Noncommutativity: From Gravity to Quantum Mechanics

Catarina Bastos
IST, Lisbon

Fecha:

Lunes 16 de noviembre
16:00 h.

Lugar:

Sala de Conferencias
CFMAC (CSIC), c/ Serrano, 121

Abstract: A phase-space noncommutativity (NC) is considered in the context of a Kantowski-Sachs cosmological model. Then, the interior of a Schwarzschild black hole is analyzed. One deduces the thermodynamics and show that the Hawking temperature and entropy exhibit an explicit dependence on the momentum noncommutativity parameter, η. Furthermore, the t=r=0 singularity is analysed in the noncommutative regime and it is shown that the wave function vanishes in this limit.
Quantumness and separability criteria for continuous variable systems are discussed for the case of a NC phase-space quantum mechanics. In particular, the quantum nature and the entanglement configuration of NC two-mode Gaussian states are examined. Finally, a more general measurement disturbance uncertainty principle is presented in a Robertson-Schrödinger formulation. It is shown that it is stronger and having nicer properties than Ozawa's uncertainty relations. In particular is invariant under symplectic transformations. One shows also that there are states of the probe (measuring device) that saturate the matrix formulation of measurement disturbance uncertainty principle.

Ciclo de seminarios organizado conjuntamente por los grupos
- *Teorías Efectivas en Física Moderna* (UCM)
- *Gravitación y Cosmología* (IEM-CSIC)

Página web: http://loops11.iem.csic.es/madrid-cosmos

CSIC
Consejo Superior de Investigaciones Científicas