Ciclo de Seminarios 2020 A

Fecha: 27 de enero
Título: "*Waves of space-time from a collapsing compact object*"
Ponente: M. en C. Jaime Mendoza Hernández. Doctorando del Departamento de Física, CUCEI.

Liga del artículo:
https://arxiv.org/pdf/1910.07297.pdf

Fecha: 17 de febrero
Título: "Decoherence as detector of Unruh-DeWitt effect"
Ponente: M. en C. Manuel de Atocha Rodríguez Fernández. Doctorando del Departamento de Física, CUCEI.

Resumen

We suggest a new type of Unruh-DeWitt detector based on a two-level quantum system, which measures the partial decoherence of the reduced density matrix of the detector interacting with the quantum scalar field. We argue that this detector can significantly improve the conditions for measuring the Unruh effect.

Fecha: 24 de febrero
Título: "Dark Matter Spin-Spin Interaction through the Pseudo-Scalar Vacuum Field"
Ponente: Dr. Alexander Nesterov. Departamento de Física, CUCEI.

Resumen

We suggest that the pseudo-scalar vacuum field (PSV) in the dark matter (DM) sector of the Universe may be as important as the electromagnetic vacuum field in the baryonic sector. In particular, the spin-spin interaction between the DM fermions, mediated by PSV, may represent the strongest interaction between the DM fermions due to the absence of the electric charge and the magnetic dipole moment. Based on this assumption, we consider the influence of the spin-spin interaction, mediated by PSV, on the spin precession of the DM fermions (e. g. neutralino). In the secular approximation, we obtain the exact expression describing the frequency of the precession and estimate the decoherence rate.