Seminario

Departamento de Física Teórica

"Radiation pressure of photon propagating in a magnetized vacuum"

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Abstract:

Using the quadratic expansion in the photon fields of non-linear electrodynamics (NLED) Lagrangian model we study relevant vacuum properties in a scenario involving the propagation of a photon probe in the presence of a background constant and static magnetic field. We compute the gauge invariant, symmetric and conserved energy-momentum tensor (EMT) and the angular momentum tensor (AMT) for arbitrary magnetic field strength using the Hilbert method under the soft-photon approximation. From the EMT we analyze some quantities of interest such as the energy density, pressures, Poynting vector, and angular momentum vector. We discuss further physical implications and experimental strategies to test magnetization, photon pressure and efective magnetic moment.

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Fecha: jueves 20 de abril de 2023
Hora: 12:10
Lugar: seminario de Física Teórica

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