

Dynamical Casimir Effect in an Oscillatory Cylindrical Cavity on a Magnetized Background

Wednesday, May 20, 2015 5:00 PM (15 minutes)

It has been found that the external magnetic field can induce particle creations from vacuum fluctuations of quantum electromagnetic field. This indicates that the quantum fluctuations associated with one loop corrections can be amplified by an intense magnetic field. It is interesting to consider the particle creation process in the dynamical Casimir effect on a magnetized background. In this work, we apply the Euler-Heisenberg action, the effective action dominated by the one loop correction term, to deal with the quantum electromagnetic field in the cavity with non-stationary boundary condition. The number of created photons are determined in the process with an oscillating cylindrical conducting wall, which is in a uniform magnetic field parallel to the wall. We also discuss the effect of the external magnetic field on particle creations in the dynamical Casimir effect.

Primary author: Dr HIRUNSIRISAWAT, Ekapong (Office of Engineering Science Classroom, Learning Institute, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand)

Presenter: Dr HIRUNSIRISAWAT, Ekapong (Office of Engineering Science Classroom, Learning Institute, King Mongkut's University of Technology Thonburi, Bangkok 10140, Thailand)

Session Classification: High-Energy and Particle Physics

Track Classification: High Energy and Particle Physics