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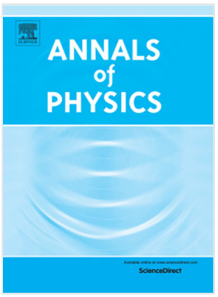

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A.F. Santos, Faqir C. Khanna

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Casimir effect at finite temperature for pure-photon sector of the Minimal Standard Model Extension

A. F. Santos[a,b], Faqir C. Khanna[b,*]

[a] *Instituto de Física, Universidade Federal de Mato Grosso, 78060-900, Cuiabá, Mato Grosso, Brazil*
[b] *Department of Physics and Astronomy, University of Victoria, 3800 Finnerty Road Victoria, BC, Canada*

Abstract

Dynamics between particles is governed by Lorentz and CPT symmetry. There is a violation of Parity (P) and CP symmetry at low levels. The unified theory, that includes particle physics and quantum gravity, may be expected to be covariant with Lorentz and CPT symmetry. At high enough energies, will the unified theory display violation of any symmetry? The Standard Model Extension (SME), with Lorentz and CPT violating terms, has been suggested to include particle dynamics. The minimal SME in the pure photon sector is considered in order to calculate the Casimir effect at finite temperature.

Keywords: Casimir effect, Standard Model Extension, Finite temperature

1. Introduction

Symmetry has been a guiding principal in constructing possible interactions between different fundamental particles. For a long time it was considered that invariance under CPT would give us the possible structure of interactions. This notion was modified by the discovery of Parity violation in weak interactions [1]. It was confirmed experimentally [2] by measuring β-decay of $^{60}Co \rightarrow {}^{60}Ni$. Subsequently CP symmetry violation in K-decay was discovered [3]. However

*Professor Emeritus - Physics Department, Theoretical Physics Institute, University of Alberta, Edmonton, Alberta, Canada
Email addresses: alesandroferreira@fisica.ufmt.br (A. F. Santos), khannaf@uvic.ca (Faqir C. Khanna)