

ON ASYMPTOTIC TIME FOR AN EVOLUTION WITH NON-LOCAL BOUNDARY CONDITION

*F. DIABA,**E. CHEREMNIKH

* BADJI MOKHTAR-ANNABA, ALGERIA

E-MAIL: BOUMARAF@HOTMAIL.COM

**LVIV POLYTECHNIC NATIONAL UNIVERSITY, UKRAINE

E-MAIL: ECHEREMN@POLYNET.LVIV.UA

(Received 06 June 2005)

ABSTRACT. Physically meaningful solutions of Maxwell equations on $S^3 \times R$ spacetime are derived, as linear superposition of the α - and β -polarized, left- and right-moving modes, of positive and negative frequencies. Using the orthonormal electric and magnetic fields intensities, we compute the components of the Umov–Poynting vector, of the effective momentum and the energy density. In the last section, non-trivial solutions for the 4-potential A^k , satisfying the $F^{ij} = 0$ property, are employed to analyze how the presence of the electromagnetic vacuum modes is affecting the solution of the Klein–Gordon equation, in comparison to its usual form on the Minkowskian background.

AMS Classification: 47A20, 47A30, 47H12, 46B34.

Keywords: Non-local boundary condition, spectrum, spectral singularity, Laplace transformation, evolution equation

1. INTRODUCTION

In the present article we consider one of the questions of functional calculus for non-selfadjoint operators. Among numerous works in this direction (Ljance V., Kato T., Kuroda T., Kako T., Yajima and others) we indicate Cheremnikh [1] about the exponential function of Sturm-Liouville's operator and Cheremnikh [2] about the function of the operators of some Friedrichs' model.

In the work [3] the perturbation of domain of definition was introduced within Friedrichs' model, but the function of corresponding operator was not considered.

JOURNAL OF DYNAMICAL SYSTEMS & GEOMETRIC THEORIES
VOL. 4, NUMBER 1 (2006) 61-77.
©TARU PUBLICATIONS