

FORMULA FOR SECOND REGULARIZED TRACE OF A PROBLEM WITH SPECTRAL PARAMETER DEPENDENT BOUNDARY CONDITION

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Abstract

In the paper we establish a formula for the second regularized trace of the problem generated by a Sturm – Liouville operator equation and with a spectral parameter dependent boundary condition.

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1. Introduction

Let H be a separable Hilbert space. In the Hilbert space $L_2([0, \pi], H)$ we consider the following boundary value problem

$$(1.1) \quad -y''(t) + Ay(t) + q(t)y(t) = \lambda y(t),$$

$$(1.2) \quad y(0) = 0,$$

$$(1.3) \quad y'(\pi) - \lambda y(\pi) = 0.$$

Here A is a selfadjoint positive definite operator ($A > E$, E is the identity operator in H) with a compact inverse, $q(t)$ is a selfadjoint operator-valued function in H for each t . Also let $q(t)$ be weakly measurable with the properties:

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