

INTRODUCTION

This thesis is a continuation of Suma's Thesis ([1]).

It consists of two chapters :

Chapter I is the study of some properties of nontrivial solution of the equation

$$(*) \quad f''(t) + \lambda P(t) f(t) = 0,$$

which satisfies some boundary conditions.

Chapter II is the evaluation of some Wiener Integrals by using the equation (*). Wiener Integral in which we are interested is

$$\int_C \exp \left(\lambda \int_0^1 P(t) x^2(t) dt \right) dW(x), \quad -\infty < \lambda < \lambda_0,$$

or more generally

$$\int_C F[x] \exp \left(\lambda \int_0^1 P(t) x^2(t) dt \right) dW(x), \quad -\infty < \lambda < \lambda_0,$$

where P is a positive continuous function on $[0,1]$ and λ_0 is the least characteristic value of the equation (*) corresponding to the boundary conditions $f(0) = f'(1) = 0$. This chapter also includes the evaluation of $\int_C \exp \left(\lambda \int_0^1 P(t) x^2(t) dt \right) dW(x)$ where P is nonnegative and continuous on $[0,1]$.