Nihonkai Math. J.
Vol.6 (1995), 43-61

ON THE SPECTRAL GEOMETRY OF CLOSED MINIMAL SUBMANIFOLDS IN A SASAKIAN OR COSYMPLETIC MANIFOLD WITH CONSTANT ϕ - SECTIONAL CURVATURE

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1. INTRODUCTION

The spectral geometry for the second order operators arising in Ri emannian geometry has been studied by many authors [2,5,6,9,10,11]. Among them, the spectral geometry of the normal Jacobi operator for minimal submanifolds was studied by H.Donnelly [2], T.Hasegawa [6]. The normal Jacobi operator arises in the second variation formula for the functional area. This formula can be expressed in terms of an elliptic differential operator J (called the *normal Jacobi operator*) defined on the cross section $\Gamma(NM)$ of the normal bundle of the isometric minimal immersion $f : M \longrightarrow N$, which is defined by $J = \tilde{\Delta} + \tilde{R} - S$, where $\tilde{\Delta}$ is the rough Laplacian on NM and $\tilde{R}$ and S are linear transformations of NM defined by means of a partial *Ricci operator* $\tilde{R}$ of N and of the second fundamental form and its transpose, respectively.

The purpose of the present paper is to study Sasakian and cosympletic analogoues for certain results of [2,6]. The spectral geometry for the Jacobi operator of the energy of a harmonic map was studied by H.Urakawa [11] (for manifolds), and S.Nishikawa, P.Tondeur and L.Vanhecke [9] (for Riemannian foliations).

This research was in part supported by a grant from University of Ulsan,Korea (1994) .