

Geometry and Symmetry in Physics

ISSN 1312-5192

LAPLACE-BELTRAMI OPERATOR OF A HELICOIDAL HYPER-SURFACE IN FOUR-SPACE

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Abstract. We introduce helicoidal hypersurface in the four dimensional Euclidean space. We calculate the mean and the Gaussian curvature, and some relations of the helicoidal hypersurface. Then we give the Laplace-Beltrami operator of the helicoidal hypersurface.

MSC: Primary 53A35; Secondary 53C42

Keywords: Gaussian curvature, Helicoidal hypersurface, Laplace-Beltrami opera-

tor, mean curvature

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1. Introduction

The notion of finite type immersion of submanifolds of a Euclidean space has been used in classifying and characterizing well known Riemannian submanifolds [3]. Chen [3] posed the problem of classifying the finite type surfaces in the three-dimensional Euclidean space \mathbb{E}^3 . A Euclidean submanifold is said to be of Chen finite type if its coordinate functions are a finite sum of eigenfunctions of its Laplacian Δ .