LAPLACE-BELTRAMI OPERATOR OF A HELICOIDAL HYPERSURFACE IN FOUR-SPACE

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Communicated by Ivaïlo Mladenov

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 operator, mean curvature

Contents

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.