

Generic submanifolds of an odd-dimensional sphere

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Dedicated to professor Younki Chae on his 60th birthday

Introduction

Submanifolds of a Sasakian manifold were investigated from two different points of view, namely, one is the case where submanifolds are tangent to the structure vector, and the other is the case where those are normal to the structure vector [3], [6], [7] etc. But, without these considerations generic submanifolds of a Sasakian manifold are defined as follows : Let M be a submanifold of a Sasakian manifold $\tilde{M}$ with almost contact metric structure (ϕ, G, V) . If each normal space is mapped into the tangent space under the action of ϕ , M is called a generic submanifold of $\tilde{M}$ [4]. For example, hypersurfaces of a Sasakian manifold are generic.

The purpose of the present paper is to investigate generic submanifolds of an odd-dimensional sphere with nonvanishing parallel mean curvature vector.

In §1, we state general formulas on generic submanifolds of a Sasakian manifold. §2 is devoted to the study a generic submanifold of a Sasakian manifold, which is not tangent to the structure vector. Moreover, we suppose that the shape operator in the direction of the mean curvature vector commutes with the structure tensor induced on the submanifold. In §3 we study generic submanifolds which is not tangent to the structure vector of an odd-dimensional unit sphere with nonvanishing parallel mean curvature vector. In §4, we consider generic submanifolds, tangent to the structure vector, of an odd-dimensional sphere and compute the restricted Laplacian

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