PSEUDOPARALLEL ANTI-INARIANT SUBMANIFOLDS OF KENMOTSU MANIFOLDS

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Abstract

We consider an anti-invariant, minimal, pseudoparallel and Ricci-generalized pseudoparallel submanifold $M$ of a Kenmotsu space form $\tilde{M}(c)$, for which $\xi$ is tangent to $M$.

Keywords: Kenmotsu space form, Anti-invariant submanifold, Pseudoparallel submanifold, Ricci-generalized pseudoparallel submanifold.

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1. Introduction

An $n$-dimensional submanifold $M$ in an $m$-dimensional Riemannian manifold $\tilde{M}$ is pseudoparallel [1], if its second fundamental form $\sigma$ satisfies the following condition

\[(1.1) \quad \mathbf{R} \cdot \sigma = L_\sigma Q(g, \sigma).\]

Pseudoparallel submanifolds in space forms were studied by A. C. Asperti, G. A. Lobos and F. Mercuri (see [1] and [2]). Also, R. Deszcz, L. Verstraelen and Ş. Yaprak [6] obtained some results on pseudoparallel hypersurfaces in a 4-dimensional space form $\mathcal{N}^4(c)$. Moreover, $C$-totally real pseudoparallel submanifolds of Sasakian space forms were studied by A.Yıldız, C. Murathan, K. Arslan and R. Ezentaş in [12].

On the other hand, in [9], C. Murathan, K. Arslan and R. Ezentaş defined submanifolds satisfying the condition

\[(1.2) \quad \mathbf{R} \cdot \sigma = L_\sigma Q(S, \sigma).\]

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