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COMPLEX AND REAL HYPERSURFACES OF LOCALLY CONFORMAL KÄHLER MANIFOLDS

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Abstract. We studied complex and real hypersurfaces immersed in locally conformal Kähler manifolds. We have obtained conditions for the immersions, if the manifolds admit existence of such complex hypersurfaces that are orthogonal to both Lee and anti-Lee vector fields. Also we explore real hypersurfaces immersed in LCK-manifolds.

MSC: 53B30, 53B35, 53B21
Keywords: Complex and real hypersurfaces, conformal Kähler manifolds, immersion, LCK-manifolds

1. Introduction

Differential geometric aspects of submanifolds of manifolds with certain structures are very fruitful fields for Riemannian geometry. Study of complex submanifolds immersed in locally conformal Kähler manifolds(for brevity, LCK-manifolds) was initiated by Vaisman in [12], and more attention was paid to the so called Generalized Hopf manifolds. Further development was made in [4]. Real hypersurfaces of LCK-manifolds was explored in [2]. We continue to study the immersions of submanifolds that a tangent space in all points of the submanifolds to be normal to Lee field.

2. Preliminaries

A Hermitian manifold (M^{2m}, J, g) is called a *locally conformal Kähler manifold* (*LCK-manifold*) if there is an open cover $\mathfrak{U} = \left\{U_\alpha\right\}_{\alpha\in A}$ of M^{2m} and a family