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Real hypersurfaces in a complex projective space in which the reflections with respect to ξ-curves are isometric

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Abstract. We completely classify the real hypersurfaces M in a complex projective space $\mathbf{C}P_n$ in which the reflections with respect to integral curves of the structure vector ξ are isometric. We conclude that the reflections with respect to integral curves of the structure vector ξ are isometric in M if and only if M is locally congruent to one of homogeneous real hypersurfaces of type (A) and (B).

Key words: complex projective space, real hypersurface, reflection, ξ-curves.

1. Introduction

In Riemannian Geometry the group of isometric transformations of a manifold plays an important role. Riemannian symmetric space is defined by the condition that any geodesic symmetry gives an isometric transformation of it. Weakly symmetric space which is introduced by A. Selberg ([12]) is a space whose any two points can be interchanged by a suitable isometry of it. The concept of reflections of a manifold with respect to an embedded submanifold is a generalization of geodesic symmetries (cf. [2]). In the paper [1] J. Berndt and L. Vanhecke shows that homogeneous real hypersurfaces of type (A) in a non-flat complex space form (for definitions see Theorem T of §2) are weakly symmetric. In the paper [8] the author gives a new examples of weakly symmetric spaces. Their examples are not Riemannian symmetric. In both papers [1] and [8] they make use of reflections with respect to a totally geodesic submanifolds to construct suitable isometric transformations.

Real hypersurfaces in a complex space form present many interesting homogeneous Riemannian manifolds. So many differential geometers study these spaces. There are many charactrizations of some homogeneous real hypersurfaces in a complex space forms (cf. [11], [6], [4], [5], [3], [9]). Some

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