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ON REAL HYPERSURFACES OF A COMPLEX SPACE FORM WITH η-PARALLEL RICCI TENSOR

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Introduction.

Let $M_n(c)$ denote an n-dimensional complex space form with constant holomorphic sectional curvature c. It is well known that a complete and simply connected complex space form consists of a complex projective space $\boldsymbol{C}\boldsymbol{P}^n$, a complex Euclidean space $\boldsymbol{C}^n$ or a complex hyperbolic space $\boldsymbol{C}\boldsymbol{H}^n$, according as $c>0$, $c=0$ or $c<0$. In this paper we consider a real hypersurface M of $\boldsymbol{C}\boldsymbol{P}^n$ or $\boldsymbol{C}\boldsymbol{H}^n$.

The study of real hypersurfaces of $\boldsymbol{C}\boldsymbol{P}^n$ was initiated by Takagi [10], who proved that all homogeneous hypersurfaces of $\boldsymbol{C}\boldsymbol{P}^n$ could be divided into six types which are said to be of type A_1, A_2, B, C, D and E. Moreover, he showed that if a real hypersurface M of $\boldsymbol{C}\boldsymbol{P}^n$ has two or three distinct constant principal curvatures, then M is locally congruent to one of the homogeneous ones of type A_1, A_2 and B ([11]). Recently, to give another charac terization of homogeneous hypersurfaces of type A_1, A_2 and B in $\boldsymbol{C}\boldsymbol{P}^n$ Kimura and Maeda [6] introduced the notion of an η-parallel second fundamental form, which was defined by $g((\nabla_X A)Y, Z)=0$ for any vector fields X, Y and Z orthogonal to the structure vector field ξ, where A means the second fundamental form of M in $\boldsymbol{C}\boldsymbol{P}^n$, and g and ∇ denote the induced Riemannian metric and the induced Riemannian connection, respectively.

On the other hand, real hypersurfaces of $\boldsymbol{C}\boldsymbol{H}^n$ have also been investigated by many authors (Berndt [1], Montiel [8], Montiel and Romero [9]).

Using some results about focal sets, Berndt [1] proved the following.

THEOREM A. *Let M be a connected real hypersurface of $CH^n (n\geqq 2)$. Then M has constant principal curvatures and ξ is principal if and only if M is locally congruent to one of the following.*
(A_0) *a horosphere in CH^n.*

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