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REAL HYPERSURFACES OF A COMPLEX PROJECTIVE SPACE IN TERMS OF HOLOMORPHIC DISTRIBUTION

By

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0. Introduction.

Real hypersurfaces in a complex projective space have been studied by many differential geometers (for example, see [1], [2], [3], [7], [14] and [15]). In this paper, we study real hypersurfaces in $P_n(\boldsymbol{C})$ from the point of view of holomorphic distribution, where $P_n(\boldsymbol{C})$ denotes an n-dimensional complex projective space with Fubini-Study metric of constant holomorphic sectional curvature 4.

R. Takagi ([13]) showed that all homogeneous real hypersurfaces in $P_n(\boldsymbol{C})$ are realized as the tubes of constant radius over compact Hermitian symmetric spaces of rank 1 or 2. Namely, he proved the following

THEOREM A ([13]). *Let M be a homogeneous real hypersurface of $P_n(\boldsymbol{C})$. Then M is locally congruent to one of the following*:

(A_1) *a geodesic hypersphere (, that is, a tube over a hyperplane $P_{n-1}(\boldsymbol{C})$),*
(A_2) *a tube over a totally geodesic $P_k(\boldsymbol{C})$ $(1\leqq k\leqq n-2)$,*
(B) *a tube over a complex quadric $\boldsymbol{Q}_{n-1}$,*
(C) *a tube over $P_1(\boldsymbol{C})\times P_{(n-1)/2}(\boldsymbol{C})$ and $n(\geqq 5)$ is odd,*
(D) *a tube over a complex Grassmann $G_{2,5}(\boldsymbol{C})$ and $n=9$,*
(E) *a tube over a Hermitian symmetric space $SO(10)/U(5)$ and $n=15$.*

On the other hand, Kimura ([4], [5]) constructed a certain class of non-homogeneous real hypersurfaces in $P_n(\boldsymbol{C})$, which are called *ruled* real hypersurfaces in $P_n(\boldsymbol{C})$.

Let M be a real hypersurface of $P_n(\boldsymbol{C})$ and denote by TM the tangent bundle of M. Set $\xi=-JN$, where J is the complex structure tensor of $P_n(\boldsymbol{C})$ and N is a local unit normal vector field of M in $P_n(\boldsymbol{C})$. Then we may write as $T_xM=T_x^0M+\boldsymbol{R}\{\xi_x\}$ at any fixed point x of M, where T_x^0M is a J-invariant subspace of T_xM. Let A_2 be the second fundamental form for the subbundle

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