

CHARACTERIZATIONS OF SOME REAL HYPERSURFACES IN $P_n(C)$ IN TERMS OF RICCI TENSOR*

Dedicated to Professor Hisao Nakagawa on his sixtieth birthday

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§0. Introduction

Let $P_n(C)$ be an n -dimensional complex projective space equipped with the Fubini-Study metric of constant holomorphic sectional curvature 4, and let us denote by M a real hypersurface of $P_n(C)$. Then M admits a natural almost contact structure (ϕ, ξ, η, g) induced from the almost complex structure J of $P_n(C)$.

Recently many differential geometers ([1],[3],[5],[7],[13]) have studied several characterizations of homogeneous real hypersurfaces which are said to be of type A_1, A_2, B, C, D and E , introduced as model hypersurfaces in the works of Takagi[13], Cecil-Ryan[1] and Kimura and Maeda[7], in terms of tensor equations.

On the other hand, Tashiro-Tachibana[15] proved that there does not exist a real hypersurface in $P_n(C)$ with the parallel second fundamental tensor. Thus there can not be existed totally umbilical or totally geodesic hypersurfaces in $P_n(C)$. From this point of view, Y.Maeda[10] calculated the norm of the second fundamental tensor and showed that it is estimated by $\|\nabla A\|^2 \geq 4(m-1)$, where the equality holds if and only if M is of type A_1 and A_2 .

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