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COMPLETE 2-TRANSNORMAL HYPERSURFACES IN A KAEHLER MANIFOLD OF NEGATIVE CONSTANT HOLOMORPHIC SECTIONAL CURVATURE

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§1. Introduction

The idea of constant width has been developed in a somewhat different spirit, as a topic in differential geometry, and the concept of "transnormality" has been introduced as the generalized one of constant width in a Riemannian manifold.

Let M be a connected complete hypersurface of a connected complete Riemannian manifold $\bar{M}$. For each $x\in M$, there exists, up to parametrization, a unique geodesic τ_x of $\bar{M}$ which intersects M orthogonally at x. M is called *a transnormal hypersurface* of $\bar{M}$ if, for each pair $x, y\in M$, the relation $y\in\tau_x$ implies that $\tau_x=\tau_y$. For a transnormal hypersurface M, we define an equivalence relation $\sim$ on M as follows; for $x, y\in M$, $x\sim y$ means that $y\in\tau_x$. Then we can consider the quotient space $\hat{M}=M/\sim$ with the quotient topology with respect to this relation. We call M an *r-transnormal* hypersurface if the natural projection of M onto $\hat{M}$ is an r-fold covering map.

Topological structures of transnormal submanifolds are full of interest and have been investigated from various angles (for example, see [3]). On the other hand, differential geometric structures of 2-transnormal hypersurfaces in a space form have been given in [2] and [4].

Recentry, the author has studied in [5] differential geometric structures of compact 2-transnormal hypersurfaces in a complex space form. The purpose of this paper is to generalize the result in [5] to the case where 2-transnormal hypersurfaces are complete. Namely we shall prove that 2-transnormal hypersurfaces in a Kaehler manifold of negative constant holomorphic sectional curvature are tubes over some submanifolds or geodesic hyperspheres if any principal curvature is constant.

§2. Preliminalies

First we shall review the definition of the function L_p on M for some point

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