

On Totally Real Maximal Spacelike Submanifolds of an Indefinite Complex Space Form

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Abstract

Chen-Ogiue [1] showed that if M is an n -dimensional compact totally real minimal submanifold immersed in $\bar{M}^n(c)$ then M is totally geodesic if $S < \frac{n(n+1)}{4(2n-1)}c$.

The purpose of this manuscript is to study the geometry of an n -dimensional totally real maximal spacelike submanifold M immersed in an indefinite complex space form $\bar{M}(c), c \neq 0$. We have generalized Chen-Ogiue's result by showing that if M is an n -dimensional compact totally real maximal spacelike submanifold of $\bar{M}_p^{n+p}(c), c \neq 0$, then $S \geq \frac{(n+1)(n+2p)}{4(2n+4p-1)}c$.

Moreover, if S is less than $\frac{(n+1)(n+2p)}{4(2n+4p-1)}c$ then M is totally geodesic.

Keywords: Totally real spacelike submanifold, Indefinite Complex space form.

Introduction

Among all submanifolds of a Kaehler manifold there are two classes; the class of totally real submanifolds and the class of holomorphic submanifolds. A submanifold of a Kaehler manifold is called totally real (resp. holomorphic) if each tangent space of the submanifold is mapped into the normal space (resp. itself) by the almost complex structure of the Kaehler manifold [1]. A Kaehler manifold of constant holomorphic sectional curvature is called a complex space form.