The Ricci Curvature of Totally Real 3-dimensional Submanifolds of the Nearly Kaehler 6-Sphere

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Abstract

Let M be a compact 3-dimensional totally real submanifold of the nearly Kaehler 6-sphere. If the Ricci curvature of M satisfies $Ric(M) \geq \frac{53}{64}$, then M is a totally geodesic submanifold (and $Ric(M) \equiv 2$).

1. Introduction

On a 6-dimensional unit sphere S^6, we can construct a nearly Kaehler structure J by making use of the *Cayley number* system (see [3] or [7]).

Let M be a compact 3-dimensional Riemannian manifold. M is called a totally real submanifold of S^6 if $J(TM) \subseteq T^{\perp}M$, where TM and $T^{\perp}M$ are the tangent bundle and the normal bundle of M in S^6, respectively. In [2], Ejiri proved that a 3-dimensional totally real submanifold of S^6 is orientable and minimal. In [1], Dillen-Opozda-Verstraelen-Vrancken proved the following sectional curvature pinching theorem

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