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GENERIC SUBMANIFOLDS OF AN EVEN-DIMENSIONAL EUCLIDEAN SPACE

U-HANG KI & JIN SUK PAK

Dedicated to Professor Kentaro Yano on his 70th birthday

0. Introduction

Recently several authors have studied generic submanifolds (anti-holomorphic submanifolds) immersed in Kaehlerian manifolds by using the method of Riemannian fibre bundles ([3], [4] and [8] etc.).

The purpose of the present paper is to characterize generic submanifolds of an even-dimensional Euclidean space.

In §1, we recall fundamental properties and structure equations for generic submanifolds immersed in an even-dimensional Euclidean space.

In §2, we prove some lemmas under the assumption that the f-structure induced on the submanifold and the second fundamental tensors commute.

In §3, we characterize generic submanifolds of an even-dimensional Euclidean space under certain conditions.

In 1971 Yano and Ishihara [6] proved the following.

Theorem A. *Let M be a complete submanifold of dimension n immersed in a Euclidean space E^m of dimension m $(1 < n < m)$ with nonnegative sectional curvature. Suppose that the normal connection of M is flat and the mean curvature vector of M is parallel in the normal bundle. If the length of the second fundamental form of M is constant in M, then M is a sphere $S^n(r)$ of dimension n, an n-dimensional plane $E^n(\subset E^m)$, a pythagorean product of the form*

$$(1)\quad S^{p_1}(r_1) \times \cdots \times S^{p_N}(r_N), \quad p_1 + \cdots + p_N = n,\ 1 < N \leqslant m - n,$$

or a pythagorean product of the form

$$(2)\quad \begin{aligned} &S^{p_1}(r_1) \times \cdots \times S^{p_N}(r_N) \times E^p, \\ &\qquad\qquad p_1 + \cdots + p_N + p = n,\ 1 < N \leqslant m - n, \end{aligned}$$

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