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KŌDAI MATH. SEM. REP.
26 (1975), 210—215

ON QUATERNION KÄHLERIAN MANIFOLES ADMITTING THE AXIOM OF PLANES

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§0. Introduction.

A Riemannian manifold satisfies, as is well known, the axiom of planes if and only if it is of constant curvature (See Cartan [3]). In 1953, Yano and Mogi [8] proved that a Kählerian manifold is of constant holomorphic sectional curvature if and only if it admits the axiom of holomorphic planes. Thereafter Ogiue [7] proved in 1964 that a Sasakian manifold is of constant C-holomorphic sectional curvature if and only if it admits the axiom of C-holomorphic planes or C-holomorphic free mobility.

Recently, quaternion Kählerian manifolds have been studied by several authors [1], [2], [4], [5], [6] and interesting results have been obtained. In a recent paper [5], Ishihara have determined the form of the curvature tensor of a quaternion Kählerian manifold with constant Q-sectional curvature (See the formula (1.8)). The purpose of the present paper is to prove

THEOREM. *A quaternion Kählerian manifold M admits the axiom of Q-planes if and only if it is of constant Q-sectional curvature, provided that* $\dim M \geqq 8$.

COROLLARY. *A quaternion Kählerian manifold M of dimension $4m$ admits the axiom of Q-planes of order p $(1 \leqq p \leqq m)$ if and only if it is of constant Q-sectional curvature, provided* $\dim M \geqq 8$.

The authors wish to express their sincere gratitude to Professor S. Ishihara who gave them valuable suggestions.

§1. Preriminaries.

We now recall definitions and some formulas in quaternion Kählerian manifolds (See [5]). Consider a Riemannian manifold (M, g) which admits 3-dimensional vector bundle V consisting of tensors of type $(1, 1)$ over M. The triple (M, g, V) is called a *quaternion Kählerian manifold* if M, g and V satisfy the following conditions (a) and (b):

Received July 23, 1973.