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# ON CONFORMALLY FLAT SPACES SATISFYING A CERTAIN CONDITION ON THE RICCI TENSOR

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**1. Introduction.** The Riemannian curvature tensor $R$ of a locally symmetric Riemannian manifold $(M, g)$ satisfies

$$(*) \qquad R(X, Y)\cdot R = 0 \quad \text{for any tangent vectors } X \text{ and } Y,$$

where the endomorphism $R(X, Y)$ operates on $R$ as a derivation of the tensor algebra at each point of $M$.

Let $R_1$ be the Ricci tensor of $(M, g)$. Then (*) implies in particular

$$(**) \qquad R(X, Y)\cdot R_1 = 0 \quad \text{for any tangent vectors } X \text{ and } Y.$$

In the present paper we shall prove

THEOREM A. *Let $M^m$ $(m \geqq 3)$ be an m-dimensional connected complete conformally flat space satisfying the condition (**). Then $M^m$ is one of the following manifolds*:

( I ) *A space of constant curvature.*

( II ) *A locally product space of a space of constant curvature $K$ $(\neq 0)$ and a space of constant curvature $-K$.*

(III) *A locally product space of a space of constant curvature $K$ $(\neq 0)$ and a 1-dimensional space.*

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**2. Conformally flat cases of dimension $m > 3$.** Let $M^m$ $(m > 3)$ be a connected conformally flat spaces, then the curvature tensor $R$ of $M^m$ is given by