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ON BOCHNER CURVATURE TENSOR ON KAEHLER-NORDEN MANIFOLDS

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Abstract: In this paper we prove that a Bochner flat Kaehler Norden manifold is holomorphically projectively flat provided the $*$-scalar curvature tensor $S(e_i, e_i)$ vanish. We also show that a Kaehler-Norden manifold is Bochner symmetric if and only if it is locally symmetric and a Kaehler-Norden manifold is Bochner semi-symmetric if and only if it is semi-symmetric.

Keywords and Phrases: Kaehler-Norden manifold, Bochner curvature tensor, holomorphic projective curvature tensor, semi-symmetric manifold.

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1. Introduction

An even dimensional differentiable manifold M^{2n} is said to be an anti-Kaehler manifold (Kaehler-Norden manifold) [11] if a complex structure J of type (1, 1) and a pseudo-Riemannian metric g of the manifold satisfies the following conditions:

$$J^2 = -I, \tag{1.1}$$

$$g(JX, JY) = -g(X, Y), \tag{1.2}$$

and

$$\nabla J = 0, \tag{1.3}$$