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On Conformally Recurrent Kahlerian-Weyl Spaces

An m-dimensional manifold $W_m(g_{ij}, T_k)$ with a conformal metric tensor g_{ij} and a symmetric connection ∇_k is called a Weyl space if the compatibility condition $\nabla_k g_{ij} - 2T_k g_{ij} = 0$ is satisfied, where T_k is a covariant vector field.

If the Weyl space W_m admits an almost Hermitian structure F_i^j that satisfies $\dot{\nabla}_k F_i^j = 0$ (for all i, j, k) then W_m is called a Kahlerian space.

We consider an m-dimensional Weyl space W_m $(m = 2n)$ with Kahlerian structure. Let R_{ijkl} and $F^{ij} = g^{ih} F_h^j$ be the covariant curvature tensor of weight $\{2\}$ and skew-symmetric tensor of type (2,0) of weight $\{-2\}$ of W_m, respectively. Define the tensor G_{ij} of weight $\{0\}$ by $G_{ij} = H_{ij} - H_{ji}$, where $H_{ij} = \frac{1}{2} R_{ijkl} F^{kl}$.

In this work, the properties related with the tensors H_{ij} and G_{ij} are given and it is proved that G_{ij} is proportional to F_{ij} if and only if the space W_m is an Einstein-Weyl space. Furthermore, for conformally recurrent Kahlerian-Weyl space we obtained that Kahlerian Weyl space will be a conformally recurrent if and only if it is a recurrent Weyl space.

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