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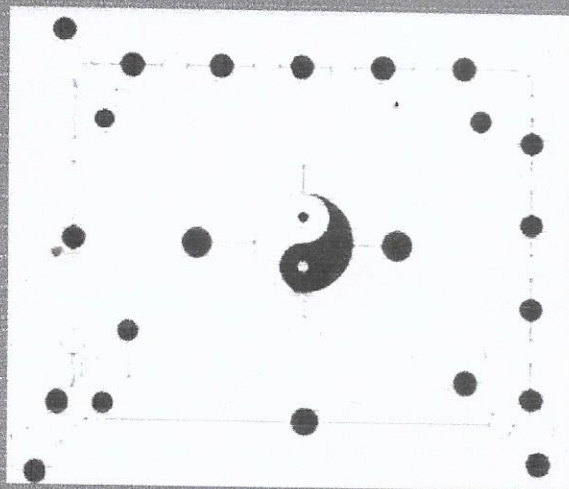
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D-Conformal Curvature Tensor in Generalized (κ, μ)-Space Forms

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Abstract: The object of the first two sections is to give brief history of generalized (κ, μ) space forms and some basic results related to such manifold. In the last section we have derived few results regarding D-conformal curvature tensor in generalized (κ, μ) space-forms.

Key Words: Generalized (κ, μ)-space form, D-conformal curvature tensor, η-Einstein manifold.

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§1. Introduction

In [1], Carriazo jointly with P. Alegre and D.E. Blair defined a generalized Sasakian space form as an almost contact metric manifold (M, ϕ, ξ, η, g) whose curvature tensor R is given by

$$
\begin{aligned}
R(X,Y)Z = &\ f_1\{g(Y,Z)X - g(X,Z)Y\} \\
&+ f_2\{g(X,\phi Z)\phi Y - g(Y,\phi Z)\phi X + 2g(X,\phi Y)\phi Z\} \\
&+ f_3\{\eta(X)\eta(Z)Y - \eta(Y)\eta(Z)X + g(X,Z)\eta(Y)\xi - g(Y,Z)\eta(X)\xi\}
\end{aligned}
\tag{1.1}
$$

for any vector fields X, Y, Z on M.

In particular a Sasakian manifold $M(\phi, \xi, \eta, g)$ is said to be a Sasakian space form if all the ϕ−sectional curvatures $K(X \wedge \phi X)$ are equal to a constant c, where $K(X \wedge \phi X)$ denotes the sectional curvature of the section spanned by the unit vector field X, orthogonal to ξ and ϕX. Later on many scientists R. Al-Ghefari, F. R. Alsomy [2],[5], M. H. Shahid have studied the CR-submanifolds of generalized Sasakian space forms. After them Ricci curvature of contact CR-submanifolds of such space were studied in [6].

In [2] authors studied contact metric and generalized Sasakian-space forms. In [7] and [8] authors studied locally ϕ-symmetric and η-recurrent Ricci tensor and also studied the projective curvature tensor respectively. Generalized Sasakian space form with few properties like conformally flat, locally symmetric were studied by Kim [9].

In recent paper [10], the authors (jointly with M. M. Tripathi) defined a generalized (κ, μ)-space form as an almost contact metric manifold $(M^{2n+1}, \phi, \xi, \eta, g)$ whose curvature tensor is

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