

ON WEAK SYMMETRIES OF ALMOST KENMOTSU (κ, μ, ν) -SPACES

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Abstract

In this paper, we study on weak symmetries of almost Kenmotsu (κ, μ, ν) -spaces. For each α, γ, δ 1-forms and any vector field X we get $\alpha + \gamma + \delta = \frac{X(\kappa)}{\kappa}$, if a $(2n + 1)$ -dimensional almost Kenmotsu (κ, μ, ν) -space is weakly symmetric and for each $\varepsilon, \sigma, \rho$ 1-forms we get $\varepsilon + \sigma + \rho = \frac{X(\kappa)}{\kappa}$, if a $(2n + 1)$ -dimensional almost Kenmotsu (κ, μ, ν) -space is weakly Ricci symmetric.

Keywords: Almost Kenmotsu Manifolds, Weak Symmetric Manifolds, Almost Kenmotsu (κ, μ, ν) -Spaces.

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1. INTRODUCTION

Weakly symmetric Riemannian manifolds are generalizations of locally symmetric manifolds and pseudo-symmetric manifolds. These are manifolds in which the covariant derivative DR of the curvature tensor R is a linear expression in R . The appearing coefficients of this expression are called associated 1-forms. They satisfy in the specified types of manifolds gradually weaker conditions.

Firstly, the notions of weakly symmetric and weakly Ricci-symmetric manifolds were introduced by L. Tamassy and T. Q. Binh in 1992 ([10] and [11]). In [10], the authors considered weakly symmetric and weakly projective-symmetric Riemannian manifolds. In 1993, the authors considered weakly symmetric and weakly Ricci-symmetric Einstein and Sasakian manifolds [11]. In 2000, U. C. De, et. all gave necessary conditions for

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