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EQUIVALENT STRUCTURES ON $N(\kappa)$ MANIFOLD ADMITTING GENERALIZED TANAKA WEBSTER CONNECTION

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Abstract: The main objective of the present paper is to study the equivalence of semi-symmetric and pseudo-symmetric conditions imposing on different curvature tensors in $N(\kappa)$ manifolds admitting generalized Tanaka Webster ($\tilde{\nabla}$) connection. Classification is done according as expression of Ricci tensor and scalar curvature with respect to $\tilde{\nabla}$. Finally an example is given.

Keywords and Phrases: $N(\kappa)$ manifold, generalized Tanaka Webster connection, pseudo-symmetry, semi-symmetry.

2020 Mathematics Subject Classification: 53D10, 53D35.

1. Introduction

In 1988 Tanno [12] introduced the notion of κ-nullity distribution of a contact metric manifold as a distribution such that characteristic vector field ξ of contact metric manifold belongs to the κ-nullity distribution. The contact metric manifold with ξ belonging to the κ-nullity distribution is called $N(\kappa)$-contact metric manifold. Such manifold have been also studied by several authors such as Blair ([4], [3]), [8], [7] and many others. In 2014, Shaikh and Khundu [10] studied the equivalency of various geometric structures obtained by some restrictions imposing on different curvature tensors. In 2016 same authors studied semi-symmetric type and pseudo-symmetric type curvature restricted geometric structures due to