ON HYPER GENERALIZED WEAKLY SYMMETRIC MANIFOLDS

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Abstract. This paper aims to introduce the notion of hyper generalized weakly symmetric manifolds with a non-trivial example.

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1. Introduction

The notion of weakly symmetric Riemannian manifold has been introduced by Tamássy and Binh [23]. Thereafter, it becomes focus of interest for many geometers. For details, we refer to [6], [9], [10], [12], [17], [19–21], [2] and the references there in.

In the spirit of [23], a non flat Riemannian manifold $(M^n, g)(n > 2)$, is said to be weakly symmetric manifold, if its curvature tensor $\bar{R}$ of type $(0, 4)$ is not identically zero and satisfies the identity

$$
\begin{aligned}
(\nabla_X \bar{R})(Y, U, V, \ W) = {}& A(X)\bar{R}(Y, U, V, \ W) \\
& + B(Y)\bar{R}(X, U, V, \ W) + B(U)\bar{R}(Y, X, V, \ W) \\
& + D(V)\bar{R}(Y, U, X, \ W) + D(W)\bar{R}(Y, U, V, \ X)
\end{aligned} \tag{1}
$$

where A, B & D are non-zero one-forms defined by $A(X) = g(X, \sigma_1)$, $B(X) = g(X, \pi_1)$ and $D(X) = g(X, \partial_1)$, for all X and $\bar{R}(Y, U, V, \ W) = g(R(Y, U)V, \ W)$,