

SOME CHARACTERIZATIONS OF GENERALIZED RICCI SOLITONS

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The importance of Ricci solitons comes from the fact that they are corresponding to self-similar solutions of the Ricci flow and at the same time they are natural generalizations of Einstein metrics. Some generalizations like gradient Ricci solitons [1], quasi Einstein manifolds [2] and generalized quasi Einstein manifolds [3] play important roles to classify the self-similar solutions of geometric flows and to describe the local structure of certain manifolds. In this talk, we focus on another generalization which is generalized Ricci soliton [4] introduced as a class of overdetermined system of equations

$$(1) \quad \mathcal{L}_X g + 2\alpha X^\flat \otimes X^\flat - 2\beta Ric = 2\lambda g$$

on pseudo-Riemannian manifolds (M^n, g) for some vector field X and some real constants α, β and λ , where $\mathcal{L}_X g$ and X^\flat denote the Lie derivative of the metric g in the direction of X and the canonical 1-form associated to X , respectively. Briefly, the main objective of this work is to understand the relationship between certain vector fields and generalized Ricci solitons.

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