

η -Ricci Solitons on Kenmotsu 3-Manifolds

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Abstract. In the present paper we study η -Ricci solitons on Kenmotsu 3-manifolds. Moreover, we consider η -Ricci solitons on Kenmotsu 3-manifolds with Codazzi type of Ricci tensor and cyclic parallel Ricci tensor. Beside these, we study ϕ -Ricci symmetric η -Ricci soliton on Kenmotsu 3-manifolds. Also Kenmotsu 3-manifolds satisfying the curvature condition $R.R = Q(S, R)$ is considered. Finally, an example is constructed to prove the existence of a proper η -Ricci soliton on a Kenmotsu 3-manifold.

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Keywords. Ricci soliton, η -Ricci soliton, Kenmotsu 3-manifolds, Codazzi type of Ricci tensor, cyclic parallel Ricci tensor.

1 Introduction

In modern mathematics, the methods of contact geometry play an important role. Contact geometry has evolved from the mathematical formalism of classical mechanics. In the present paper we are entering an era of new concepts, some generalizations and applications which play a functional role in contemporary mathematics. The product of an almost contact manifold M and the real line \mathbb{R} carries a natural almost complex structure. However, if one takes M to be an almost contact metric manifold and suppose that

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