

ON CONFORMALLY FLAT SEMISYMMETRIC MIXED GENERALIZED QUASI-EINSTEIN MANIFOLDS

Işıl Taştan

Istanbul Technical University, Faculty of Science and Letters, Department of Mathematics Engineering, Mathematics Division, Ayazaa Campus, Maslak, 34469 Istanbul, Turkey
[isiltastan@gmail.com, tastani@itu.edu.tr]

The object of the present study is a type of Riemannian manifold called mixed generalized quasi-Einstein manifold. Firstly, it is shown that every Ricci semisymmetric (or semisymmetric) mixed generalized quasi-Einstein manifold (non-Einstein manifold) of dimension ($n \geq 3$) is a quasi-Einstein manifold. And, if Ricci semisymmetric (or semisymmetric) mixed generalized quasi-Einstein manifold is conformally flat, then it is a manifold of quasi-constant curvature. In addition, some properties of conformally flat Ricci semisymmetric (or semisymmetric) mixed generalized quasi-Einstein manifold are considered. It is shown that conformally flat Ricci semisymmetric (or semisymmetric) mixed generalized quasi-Einstein manifold has a proper concircular vector field and it can be expressed as a warped product $IX_{e^q}M^*$ where M^* is an Einstein manifold. It is also a subprojective manifold in the sense of Kagan. Then, it is shown that a conformally flat Ricci semisymmetric (or semisymmetric) mixed generalized quasi-Einstein manifold is isometrically locally immersed in an Euclidean space of dimension $n+1$. Moreover, conformally flat Ricci semisymmetric (or semisymmetric) mixed generalized quasi-Einstein manifolds satisfying the Codazzi type of Ricci tensor and cyclic Ricci tensor are studied. Finally, it is shown that if a complete Ricci semisymmetric (or semisymmetric) mixed generalized quasi-Einstein manifold whose scalar curvature is constant admits a nonhomothetic conformal vector field, then it is isometric to a sphere.

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