

Some recent results on diffeomorphisms of generalized Riemannian spaces and their generalizations

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Abstract. We present recent author's contributions to the theory of diffeomorphisms of manifolds in the generalized Riemannian settings. A generalized Riemannian space is a differentiable manifold endowed with a non-symmetric basic tensor. Very recently, various types of symmetric generalized Riemannian spaces were defined by the author in collaboration with M.S. Stanković and P. Peška. Conformal and concircular diffeomorphisms of generalized Riemannian spaces were studied without any additional assumptions by the same authors. Also, we recall author's results on almost geodesic mappings of generalized Riemannian spaces where additional assumptions appeared. Finally, we present author's and Lj.S. Velimirović's results on generalized Kähler spaces which include some examples of these spaces. We compare many of recently obtained results, give some open questions regarding investigation of generalized Riemannian spaces and offer new directions in studying those problems.

Keywords: diffeomorphism; generalized Riemannian space; curvature operator; symmetric space; invariant.

References

- [1] Miloš Z. Petrović, Ljubica S. Velimirović. Generalized Kahler spaces in Eisenhart's sense admitting a holomorphically projective mapping. *Mediterr. J. Math.*, 2018, 15:150, <https://link.springer.com/article/10.1007/s00009-018-1194-9>.
- [2] Miloš Z. Petrović. Special almost geodesic mappings of the second type between generalized Riemannian spaces. *Bull. Malays. Math. Sci. Soc. (2)*, 2019, 42, 707 - 727. <https://link.springer.com/article/10.1007/s40840-017-0509-5>
- [3] Miloš Z. Petrović, Mića S. Stanković and Patrik Peška. On Conformal and Concircular Diffeomorphisms of Eisenhart's Generalized Riemannian Spaces. *Mathematics*, 2019, 7, <https://doi.org/10.3390/math7070626>.