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# On projective motions of five-dimensional spaces of special form

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## Abstract

© 2017, Allerton Press, Inc. The paper is devoted to the problem of determining of 5-dimensional pseudo-Riemannian manifolds  $(M, g)$  admitting projective motions (h-spaces). A similar problem for  $n$ -dimensional proper Riemannian and Lorentz spaces was solved by Levi-Civita, Solodovnikov, Petrov and Aminova. For pseudo-Riemannian manifolds of arbitrary signature and dimension the problem of their classification in Lie algebras and Lie groups of projective transformations, set more than a hundred years ago, is still open. In this paper five-dimensional h-spaces of the type  $\{221\}$  are determined using the method of skew-normal frame (Aminova) and necessary and sufficient conditions for the existence of projective motions of the same type are established.

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## Keywords

five-dimensional pseudo-Riemannian manifold, h-space of the type  $\{221\}$ , projective motion

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