

## ON CONFORMAL MAPPINGS ONTO COMPACT EINSTEIN MANIFOLDS

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**Abstract.** In the present paper we prove non-existence theorems for conformal mappings of compact (pseudo-)Riemannian manifolds onto Einstein manifolds without boundary. We obtained certain conditions for which these mappings are only trivial.

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This paper is devoted to conformal mappings of special (pseudo-)Riemannian spaces onto Einstein spaces.

On the basis of studying the fundamental linear equations which were obtained by Mikeš, Gavril'chenko and Gladyscheva [13] we found new results of conformal mappings of compact  $n$ -dimensional pseudo-Riemannian manifolds onto Einstein manifolds.

Conformal mappings of  $n$ -dimensional Riemannian spaces  $V_n$  were studied in many papers, see for example [2, 3, 5, 6, 10–12, 15, 16]. We assume that the metrics  $g$  of  $V_n$  under study are of arbitrary signature, i.e.,  $V_n$  is either a proper Riemannian or a pseudo-Riemannian space. Conformal mappings have applications in the general theory of relativity (see, e.g., [1, 4, 5, 15]).

In 1920 Brinkmann [1] started researching on conformal mapping of (pseudo-)Riemannian manifolds  $V_n$  onto Einstein spaces  $\bar{V}_n$ . He obtained the fundamental