and $\Gamma = [\mathcal{G}_n]$. Then $F(\mathcal{G}_0) = 1$ and $F(\mathcal{G}_n) = 0$ for all $n = 1, 2, \ldots$, i.e., $\mathcal{G}_0 \equiv \Gamma$. But

$$g_0(x) = \lim_{n \to \infty} g_n(x)$$

for arbitrary $x \in X$, i.e., $g_0 = w^* = \lim_{n \to \infty} g_n$. Thus, $g_0 \not\equiv \Gamma_{(1)} \setminus \Gamma$ and $\Gamma \neq \Gamma_{(1)}$.

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**LITERATURE CITED**


**H-TRANSFORMATIONS IN RIEMANNIAN SPACES**

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A Riemannian space $V_n (n = mr)$, equipped with an integrable regular $H$-structure isomorphic to a hypercomplex algebra $h (\dim h = r)$, is considered as a real realization of a hypercomplex manifold $\tilde{V}_m$ over the algebra $h$. The geometry of $\tilde{V}_m$ can be mapped into the geometry of $V_n$. In particular, with the transformations of $\tilde{V}_m$ are associated $H$ transformations (preserving the $H$-structure of the space) in $V_n$. The $H$-conformal and the $H$-projective transformations of $V_n$ are investigated.

Here we will continue the investigations, started in [1] (the notation and the definitions from [1] are used below). We will study real Riemannian space $V_n (n = mr)$ with the metric, pure with respect to an integrable regular $H$-structure isomorphic with a hypercomplex Frobenius algebra $h (\dim h = r)$. Such a $V_n$ can be considered as a real realization of a hypercomplex Riemannian space $\tilde{V}_m$ (with an $h$-analytic metric). A mapping of the geometry of $\tilde{V}_m$ into the geometry of $V_n$ turns out to be possible.

Everywhere the indices take the following values: $i, j, k, \ldots = 1, \ldots, n = \dim V_n; \alpha, \beta, \gamma, \ldots = 1, \ldots, r = \dim h; u, v, w, \ldots = 1, \ldots, m$. With each index $i$ from $V_n$ is associated a pair of indices $(u, \alpha)$ by the law $i = (u - 1)r + \alpha$. In the sequel we will write $i = u\alpha$, $j = v\beta$, $k = w\gamma$, \ldots .

An arbitrary affinor $A \in H$ has the form

$$A = a^\alpha E^\alpha, \quad a^\alpha \in \mathbb{R}, \quad (1)$$

where $E^\alpha$ are the basic affinors of the $H$-structure corresponding to the basis $\{e^\alpha\}$ of the algebra $h$.

The $H$-structure contains the unit affinor $I$, whose components in the expansion (1) are denoted by $e^\alpha$ (the decomposition of the principal unit element 1 of the algebra $h$ with respect to the basis: $1 = e^\alpha e_\alpha$).
Definition 1. A transformation of a Riemannian space $V_n$ with a pure metric, preserving the $H$-structure of the space, is called an $H$-transformation of the space.

If a vector $X = \{x^i\}$ defines a certain $H$-transformation of $V_n$, then the condition of preservation of the $H$-structure coincides with the condition of the $h$-analyticity of the vector $X$ [2]:

$$\mathcal{L}_X A^i_j = 0, \quad A = (A^i_j) \subseteq H,$$

where $\mathcal{L}_X$ is the symbol of the Lie derivative along the field of the vector $X$.

$H$-movements and affine $H$-collineations of the Riemannian space $V_n$ with a pure metric have been investigated in [1]. Here we will study $H$-conformal and $H$-projective transformations.

1. $H$-Conformal Transformations. Let us consider the hypercomplex Riemannian space $V^*_m$ with the $h$-analytic metric

$$g_{uv} = G_{uv\mu}e^\mu$$

and the hypercomplex Riemannian space $\tilde{V}_m$ with the metric

$$\tilde{g}_{uv} = \sigma g_{uv},$$

where $\sigma = \sigma(z) = \sigma^\mu(x)e^\mu$ is an arbitrary hypercomplex function. As in the real case [3], we say that a conformal transformation of the metric $\tilde{g}_{uv}$ has been carried out and the spaces $V^*_m$ and $\tilde{V}_m$ are in conformal correspondence.

Let $V_n$ be a real realization of $V^*_m$ over the hypercomplex Frobenius algebra $h$. Then a pure metric tensor of the space $V_n$ corresponds in a one-to-one manner to the tensor (3):

$$g_{ij} = \sigma g_{ij} = \sigma G_{ij\mu}e^\mu$$

where $g_{ij}$ is the symbol of the Lie derivative along the field of the vector $X$.

Further, we assume that the tensor (4) is nonsingular, the space $V_n$ is Riemannian, and $\tilde{g}_{ij} = \sigma^\mu E_{\mu ij}$ is its metric tensor.