

**Semenov, V. I.**

**Boundedness of the topological index of a mapping as a quasiconformality condition.** (English. Russian original) [Zbl 0932.30018](#)

*Sib. Math. J.* 40, No. 4, 793-800 (1999); translation from *Sib. Mat. Zh.* 40, No. 4, 938-946 (1999).

Let  $U$  be an open set in  $\mathbb{R}^n$ ,  $n \geq 2$ , and let  $f: U \rightarrow \mathbb{R}^n$  be a continuous mapping,  $f \in W_{p,\text{loc}}^1(U)$ . Suppose  $f$  is open, isolated, possesses the Luzin property and is differentiable almost everywhere. The author uses the following definitions for the global minimum distortion on the sphere of radius  $r$  and center  $x$ ,

$$l_f(x, r) = \min_{|\mu-x|=r} |f(\mu) - f(x)|,$$

and for the local minimum distortion,

$$\lambda_1(x) = \min_{|\mu|=1, \mu \in \mathbb{R}^n} |f'(x)\mu|.$$

In the article under review, topological properties of mappings are described by means of the global and local minimum distortions. Sharp estimates of the topological index are established. These estimates are applied to studying mappings with bounded distortion. The author introduces the notion of the topological quasiconformality coefficient  $K_T(f)$  and shows that, if  $K_T(f) < 2$ , then the branching set is empty.

Reviewer: N.A.Kudryavtseva (Novosibirsk)

**MSC:**

**30C65** Quasiconformal mappings in  $\mathbb{R}^n$ , other generalizations

Cited in 1 Review

**Keywords:**

open mapping;  $N$ -property

**Full Text:** [DOI](#)

**References:**

- [1] Yu. G. Reshetnyak, *Space Mappings with Bounded Distortion* [in Russian], Nauka, Novosibirsk (1982). · [Zbl 0487.30011](#)
- [2] A. V. Chernavskii, "Finite-to-one open mappings on manifolds," *Mat. Sb.*,65, No. 3, 357–369 (1964). · [Zbl 0129.15003](#)
- [3] S. K. Vodop'yanov, "On open and discrete mappings of Sobolev classes with summable Jacobian," *Sibirsk. Mat. Zh.* (to appear).
- [4] V. I. Semënov, "An integral condition for a weakly differentiable mappings to be locally homeomorphic," *Sibirsk. Mat. Zh.* (to appear).
- [5] V. I. Semënov, "Local homeomorphy of some mappings with bounded distortion and quasiconformality coefficient less than two," *Sibirsk. Mat. Zh.*,36, No. 2, 404–408 (1995). · [Zbl 0856.35033](#) · [doi:10.1007/BF02110163](#)
- [6] T. Rado and P. V. Reichelderfer, *Continuous Transformations in Analysis with an Introduction to Algebraic Topology*, Springer Verlag, Berlin, Göttingen, and Heidelberg (1955). · [Zbl 0067.03506](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.