Quasiconformal mappings associated with Gahov's equation in inverse boundary value problems

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The question on the quantity of roots of so called Gahov's equation is of importance for the theory of inverse boundary value problems, because it determines the quantity of decisions of that problems. As known, it coincides with the number $\mathcal{N}$ of extreme points of conformal radius.

$$R \equiv R(D, z) = |f'(\zeta)|(1 - |\zeta|^2), \tag{1}$$

where $z = f(\zeta),\ \zeta \in E = \{\zeta : |\zeta| < 1\},\ D = f(E)$.

Here equlity (1) is understood as the graph of function $R(D, z)$, i.e., a surface in $\mathbb{R}^3$ over disk E or domain D. The value N coincides with the number of coverings of origin by the range of gradient of the conformal radius

$$\nabla R(D, z) = 2R_{\bar{z}}. \tag{2}$$

In this connection there arises an intrinsic problem of classification of diffeomorphisms (in particular, quasiconformal mappings) of form (2).

The present work is a review of results of the papers [4], [5] and [6], supplemented by new effects on quasiconformal mappings (2) for domains $f(rE),\ 0 < r < 1$, and on calculation of *Gahov's radiuses* for solution of inverse boundary value problems.

The talk is based on a joint work with L. Aksent'ev.

References

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