

Some boundary and geometric properties of solutions to elliptic systems in the plane

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Abstract

Solvability of the Dirichlet problem and univalence of mappings by solutions of elliptic systems on the plane are discussed. To study these questions, the system operator is represented as a perturbation of the Laplace operator in small parameters, and the solutions are approximated by functions with piecewise constant data on the boundary. We will describe the behavior of solutions to systems near a boundary point with a jump in boundary data, and also establish the principle of the argument and its consequences for such solutions – a necessary tool for further research on the problem of univalence.