

A SERIES IN A LIPSCHITZ PERTURBATION OF THE BOUNDARY FOR SOLVING THE DIRICHLET PROBLEM

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In a special Lipschitz domain treated as a perturbation of the upper half-space, we construct a perturbation theory series for a positive harmonic function with zero trace. The terms of the series are harmonic extensions to the half-space from its boundary of distributions defined by a recurrent formula and passage to the limit. The approximation error by a segment of the series is estimated via a power of the seminorm of the perturbation in the homogeneous Slobodestkiĭ space $b_N^{1-1/N}$. The series converges if the Lipschitz constant of the perturbation is small.

Key words and phrases: positive harmonic function, conformal mapping, Lipschitz continuous perturbation of the boundary.

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Received
October 18, 2016

Translated into English:

Siberian Advances in Mathematics, V. 27, N 4, 274–304 (2017).
DOI: 10.3103/S1055134417040058