

Connections between the Dirichlet and the Neumann problem

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Abstract

We provide an explicit solution of the generalized solution of the Neumann problem for the Laplace operator, based on a representation of the solution on the unit ball in \mathbb{R}^n , in terms of the solution of an associated Dirichlet problem. The representation is extended to other operators besides the Laplacian, to smooth simply connected planar domains, and to the infinite-dimensional Laplacian on the unit ball of an abstract Wiener space, providing in particular an explicit solution for the Neumann problem in this case. The talk is based on joint works with Mihai N. Pascu (Braşov, Romania) and Nicoale R. Pascu (Kennesaw State University, USA).