

ABSTRACT

Thesis: 89 p., 1 appendix, 9 sources.

DIFFERENTIAL EQUATIONS, ELLIPTIC DIFFERENTIAL EQUATION, LAPLACE EQUATION, LAPLACE OPERATOR, DIRICHLET PROBLEM, DIVERGENCE WITH RESPECT TO A MEASURE, LAPLACIAN WITH RESPECT TO A MEASURE.

The theme of this work is a Dirichlet problem in a ball for Laplace's equation with Laplacian with respect to a measure.

The object of study is a well-posed Dirichlet problem for the elliptic differential equation with Laplace operator with respect to a measure.

The subjects of study are differential equations in finite-dimensional spaces, measures in such spaces, Laplace operators with respect to these measures.

The purpose of this work is to pose a Dirichlet problem for Laplace's equation with Laplacian with respect to a measure, analyze the conditions the solution of this problem exists and is unique under, build general framework for constructing solutions for Dirichlet problem as well as find explicit solutions of the problem for some important special cases of measures.