

Public Abstract

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Graduation Term:SP 2017

Department:Mathematics

Degree:PhD

Title:TOPICS IN SPECTRAL THEORY OF DIFFERENTIAL OPERATORS

This dissertation is devoted to two eigenvalue counting problems: Determining the asymptotic behavior of large eigenvalues of self-adjoint extensions of partial differential operators, and computing the number of negative eigenvalues for bounded from below operators with compact resolvents.

In the first part of this thesis we derive a Weyl-type asymptotic formula and a bound for the eigenvalue counting function for the Krein--von Neumann extension of differential operators on open bounded domains.

In the second part of this thesis we obtain a formula relating the Maslov index, a topological invariant counting the signed number of conjugate points of paths of Lagrangian planes, and the Morse index, the number of negative eigenvalues, for the second order differential operators.