

# MULTIPARAMETER EIGENVALUE PROBLEMS STURM-LIOUVILLE THEORY



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# Multiparameter Eigenvalue Problems Sturm Liouville Theory

**Anton Zettl**



## **Multiparameter Eigenvalue Problems Sturm Liouville Theory:**

**Multiparameter Eigenvalue Problems** F.V. Atkinson, Angelo B. Mingarelli, 2010-12-07 One of the masters in the differential equations community the late F V Atkinson contributed seminal research to multiparameter spectral theory and Sturm Liouville theory His ideas and techniques have long inspired researchers and continue to stimulate discussion With the help of co author Angelo B Mingarelli *Multiparameter Eigenvalue Problems* F.V. Atkinson, Angelo B. Mingarelli, 2010-12-07 One of the masters in the differential equations community the late F V Atkinson contributed seminal research to multiparameter spectral theory and Sturm Liouville theory His ideas and techniques have long inspired researchers and continue to stimulate discussion With the help of co author Angelo B Mingarelli **Multiparameter Eigenvalue Problem** **Sturm-Liouville Theory** Anton Zettl, 2005 In 1836 1837 Sturm and Liouville published a series of papers on second order linear ordinary differential operators which started the subject now known as the Sturm Liouville problem In 1910 Hermann Weyl published an article which started the study of singular Sturm Liouville problems Since then the Sturm Liouville theory remains an intensely active field of research with many applications in mathematics and mathematical physics The purpose of the present book is a to provide a modern survey of some of the basic properties of Sturm Liouville theory and b to bring the reader to the forefront of knowledge about some aspects of this theory To use the book only a basic knowledge of advanced calculus and a rudimentary knowledge of Lebesgue integration and operator theory are assumed An extensive list of references and examples is provided and numerous open problems are given The list of examples includes those classical equations and functions associated with the names of Bessel Fourier Heun Ince Jacobi Jorgens Latzko Legendre Littlewood McLeod Mathieu Meissner Morse as well as examples associated with the harmonic oscillator and the hydrogen atom Many special functions of applied mathematics and mathematical physics occur in these examples *Multiparameter eigenvalue problems* Atkinson, 1972-06-16 Multiparameter eigenvalue problems

*Multiparameter Eigenvalue Problems and Expansion Theorems* Hans Volkmer, 2006-11-14 This book provides a self contained treatment of two of the main problems of multiparameter spectral theory the existence of eigenvalues and the expansion in series of eigenfunctions The results are first obtained in abstract Hilbert spaces and then applied to integral operators and differential operators Special attention is paid to various definiteness conditions which can be imposed on multiparameter eigenvalue problems The reader is not assumed to be familiar with multiparameter spectral theory but should have some knowledge of functional analysis in particular of Brower s degree of maps *Convolution-like Structures, Differential Operators and Diffusion Processes* Rúben Sousa, Manuel Guerra, Semyon Yakubovich, 2022-07-27 T his book provides an introduction to recent developments in the theory of generalized harmonic analysis and its applications It is well known that convolutions differential operators and diffusion processes are interconnected the ordinary convolution commutes with the Laplacian and the law of Brownian motion has a convolution semigroup property with respect to the

ordinary convolution Seeking to generalize this useful connection and also motivated by its probabilistic applications the book focuses on the following question given a diffusion process  $X_t$  on a metric space  $E$  can we construct a convolution like operator on the space of probability measures on  $E$  with respect to which the law of  $X_t$  has the convolution semigroup property A detailed analysis highlights the connection between the construction of convolution like structures and disciplines such as stochastic processes ordinary and partial differential equations spectral theory special functions and integral transforms The book will be valuable for graduate students and researchers interested in the intersections between harmonic analysis probability theory and differential equations

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*Spectral Theory & Computational Methods of Sturm-Liouville Problems* Don Hinton, 2021-02-27 Presenting the proceedings of the conference on Sturm Liouville problems held in conjunction with the 26th Barrett Memorial Lecture Series at the University of Tennessee Knoxville this text covers both qualitative and computational theory of Sturm Liouville problems It surveys questions in the field as well as describing applications and concepts

**Ordinary and Partial Differential Equations** W. N. Everitt, B. D. Sleeman, 2006-11-15

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