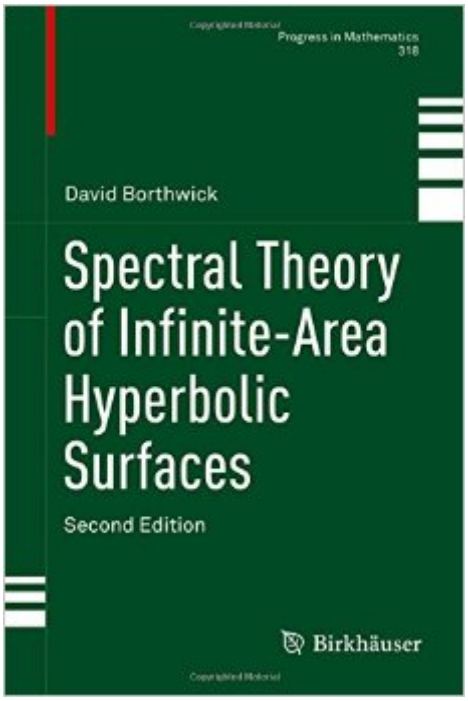
Spectral Theory Of Infinite-Area Hyperbolic Surfaces (Progress In Mathematics)



Synopsis

This text introduces geometric spectral theory in the context of infinite-area Riemann surfaces, providing a comprehensive account of the most recent developments in the field. For the second edition the context has been extended to general surfaces with hyperbolic ends, which provides a natural setting for development of the spectral theory while still keeping technical difficulties to a minimum. Â All of the material from the first edition is included and updated, and new sections have been added.Topics covered include an introduction to the geometry of hyperbolic surfaces, analysis of the resolvent of the Laplacian, scattering theory, resonances and scattering poles, the Selberg zeta function, the Poisson formula, distribution of resonances, the inverse scattering problem, Patterson-Sullivan theory, and the dynamical approach to the zeta function. Â The new sections cover the latest developments in the field, including the spectral gap, resonance asymptotics near the critical line, and sharp geometric constants for resonance bounds. Â A new chapter introduces recently developed techniques for resonance calculation that illuminate the existing results and conjectures on resonance distribution.The spectral theory of hyperbolic surfaces is a point of intersection for a great variety of areas, including quantum physics, discrete groups, differential geometry, number theory, complex analysis, and ergodic theory. Â This book will serve as a valuable resource for graduate students and researchers from these and other related fields.Â Review of the first edition:"The exposition is very clear and thorough, and essentially self-contained; the proofs are detailed...The book gathers together some material which is not always easily available in the literature...To conclude, the book is certainly at a level accessible to graduate students and researchers from a rather large range of fields. Clearly, the reader...would certainly benefit greatly from it." (Colin Guillarmou, Mathematical Reviews, Issue 2008 h)

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