INTERNATIONAL PRESS

Authors: Carlos Berenstein, Der-Chen Chang and Jingzhi Tie
ISBN:0-8218-2761-8
Year Published: 2001
Page: 319 pp
Binding: Hardcover
Price: $64

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Laguerre Calculus and its Applications on the Heisenberg Group

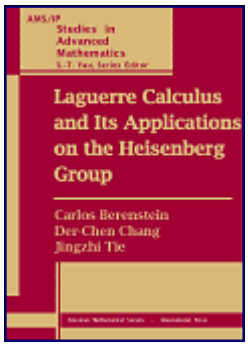
Description

For nearly two centuries, the relation between analytic functions of one complex variable, their boundary values, harmonic functions, and the theory of Fourier series has been one of the central topics of study in mathematics. The topic stands on its own, yet also provides very useful mathematical applications.

This text provides a self-contained introduction to the corresponding questions in several complex variables: namely, analysis on the Heisenberg group and the study of the solutions of the boundary Cauchy-Riemann equations. In studying this material, readers are exposed to analysis in non-commutative compact and Lie groups, specifically the rotation group and the Heisenberg groups--both fundamental in the theory of group representations and physics.

Introduced in a concrete setting are the main ideas of the Calderón-Zygmund-Stein school of harmonic analysis. Also considered in the book are some less conventional problems of harmonic and complex analysis, in particular, the Morera and Pompeiu problems for the Heisenberg group, which relates to questions in optics, tomography, and engineering.

The book was borne of graduate courses and seminars held at the University of Maryland (College Park), the University of Toronto (ON), Georgetown University (Washington, DC), and the University of Georgia (Athens). Readers should have an advanced undergraduate understanding of Fourier analysis and complex analysis in one variable.



Authors: Valentin Afraimovich and Sze-Bi Hsu
ISBN:0-8218-3168-2
Year Published: 2002
Page: 353 pp
Binding: Hardcover
Price: $49

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Lectures on Chaotic Dynamical Systems

Description

This book is devoted to chaotic nonlinear dynamics. It presents a consistent, up-to-date introduction to the field of strange attractors, hyperbolic repellers, and nonlocal bifurcations. The authors keep the highest possible level of "physical" intuition while staying mathematically rigorous. In addition, they explain a variety of important nonstandard algorithms and problems involving the computation of chaotic dynamics.

The book will help readers who are not familiar with nonlinear dynamics to understand and appreciate sophisticated modern dynamical systems and chaos. Intended for courses in either mathematics, physics, or engineering, prerequisites are calculus, differential equations, and functional analysis.