Analysis I (Graduate Series in Analysis)

Released in Feb, 2004

Description

Analysis I is part one of the undergraduate series in analysis. This book is based on the courses given by the author at Heidelberg. It comprises of materials for a one and a half semester, and can be used as a textbook. The contents range from elementary calculus to fairly advanced topics in functional analysis, measure theory and differential geometry.

The book covers "The convergence of sequences, topological concepts including continuity, compactness and connectedness, Resp. differentiation in one variable, theorems of Arzela-Ascoli and Stone-Weierstraβ and analytic functions in several variables, as well as Riemann integral.

This book, which demands minimum prerequisites, is intended for first year graduate students or undergraduates who want to pursue the Math or Physics fields.

Author: Claus Gerhardt
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(final details subject to change upon release)

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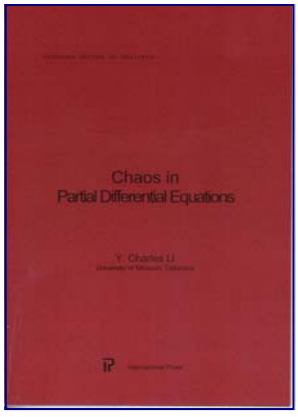
Chaos in Partial Differential Equations

Released in Feb, 2004

Description

Chaos in Partial Differential Equations is at its fast developing stage. The present book presents an overall survey on the existing results from the recent development. Nonlinear wave equations are the most important class of partial differential equations in natural sciences. Among these nonlinear wave equations, there is a class of equations called soliton equations which describes a wide spectrum of natural phenomenon. Recently, the author and his collaborators have established a systematic theory on chaos in nonlinear wave equations: a standard program for proving the existence of chaos in perturbed soliton equations, with the machineries: 1. Darboux transformations for soliton equations, 2. isospectral theory for soliton equations under periodic boundary condition, 3. persistence of invariant manifolds and Fenichel fibers, 4. Melnikov analysis, 5. Smale horseshoes and symbolic dynamics, and 6. shadowing lemma and symbolic dynamics.
This monograph will be of interest to researchers in mathematics, physics, engineering, chemistry, biology and science in general, and particularly valuable to researchers interested in chaos in high dimensions. The book can be used as a textbook for advanced graduate courses, while the author tries to make the presentations introductory such that beginners can also benefit from it.



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