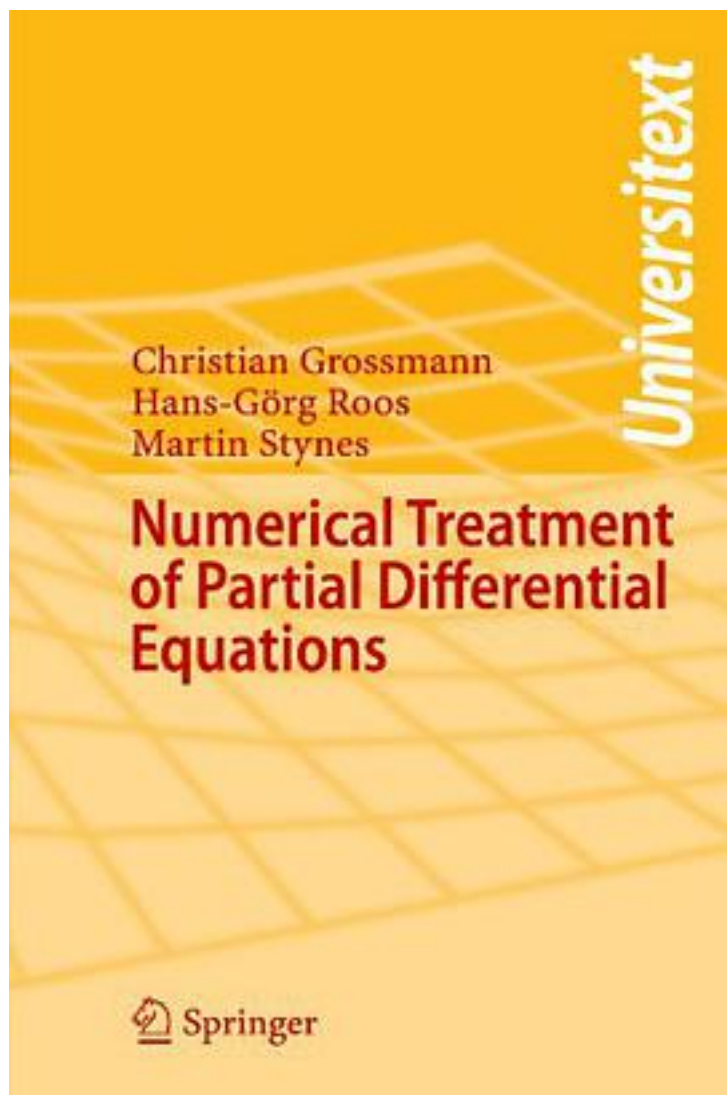# Numerical Treatment of Partial Differential Equations

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著者:Roos, Hans-Gorg

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This book deals with discretization techniques for elliptic, parabolic and hyperbolic partial differential equations. It provides an introduction to the main principles of discretizations and presents to the reader the ideas and analysis of advanced numerical methods in this area. It is the authors' aim to give mathematically-inclined students, scientists and engineers a textbook that contains all the basic discretization techniques for the three fundamental types of partial differential equations and in which the reader can find analytical tools, properties of discretizations, and some advice on algorithmic aspects. The book also covers recent research developments: for instance, introductions are given to a posteriori error estimation, discontinuous Galerkin methods, and optimal control for partial differential equations---these topics of current interest are rarely considered in other textbooks. While finite element methods are the main focus of the book, finite difference methods and finite volume techniques are also presented. Furthermore, the book provides the basic tools needed to solve the discrete problems generated, while chapters on singularly perturbed problems, variational inequalities and optimal control illuminate special topics that reflect the research interests of the authors.

作者介绍:

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# 评论

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