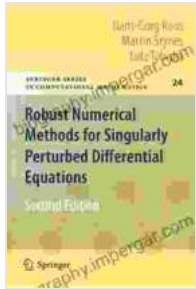


Robust Numerical Methods For Singularly Perturbed Differential Equations: A Comprehensive Guide



Robust Numerical Methods for Singularly Perturbed Differential Equations: Convection-Diffusion-Reaction and Flow Problems (Springer Series in Computational Mathematics Book 24) by Hans-Görg Roos

★★★★★ 5 out of 5

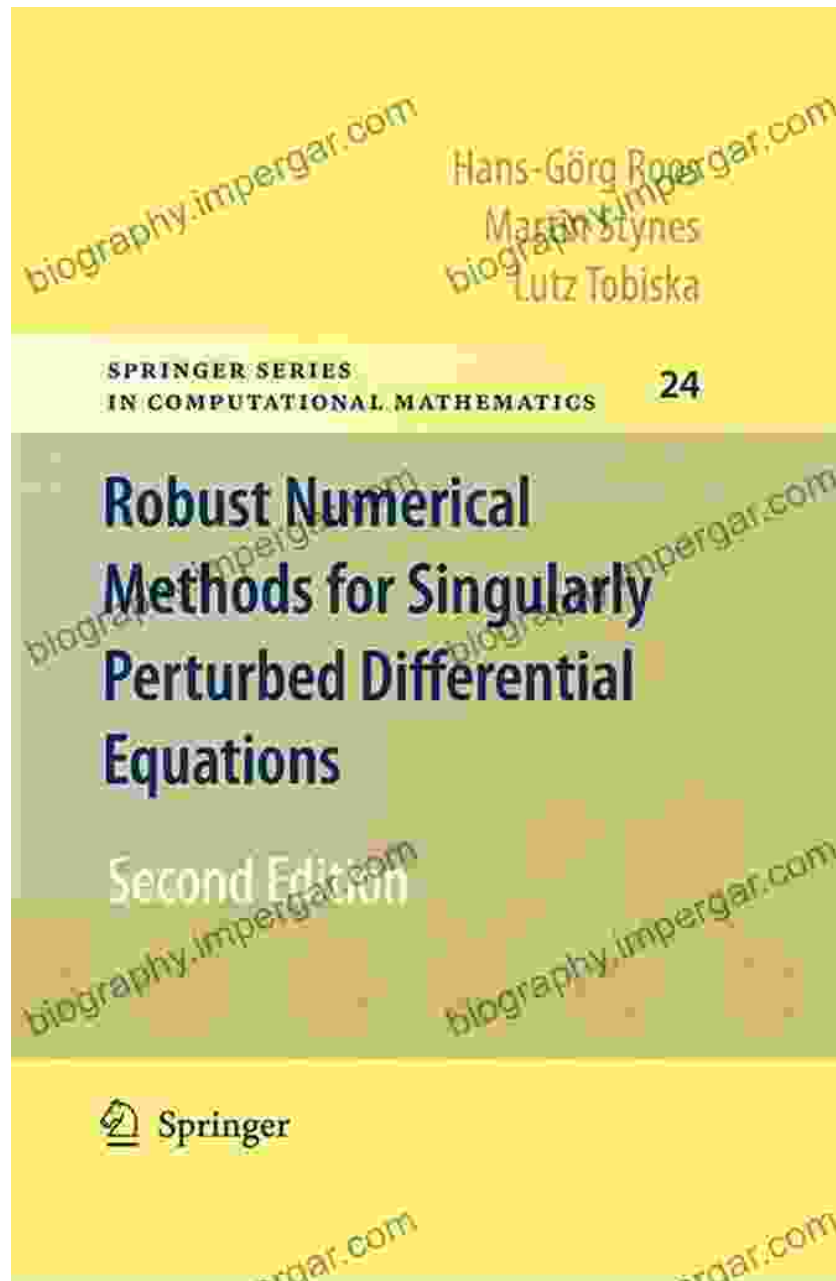
Language : English

File size : 10545 KB

Print length : 618 pages



Singularly perturbed differential equations (SPDEs) are a class of mathematical equations that arise in many applications in science and engineering, such as fluid mechanics, heat transfer, and chemical reactions. These equations can be challenging to solve numerically due to the presence of a small parameter that multiplies the highest-order derivative.



The book "Robust Numerical Methods For Singularly Perturbed Differential Equations" provides a comprehensive to the numerical solution of SPDEs. Written by experts in the field, this book covers a wide range of topics, including:

- The basic theory of SPDEs

- Different approaches to numerical methods
- Convergence and stability analysis
- Applications to various problems in science and engineering

This book is an essential resource for researchers and practitioners who need to solve SPDEs. It is also a valuable textbook for graduate students in applied mathematics, engineering, and scientific computing.

What's Inside the Book?

The book is divided into four parts:

1. : This part provides an overview of SPDEs and their applications. It also introduces the basic theory of numerical methods for SPDEs.
2. **Numerical Methods:** This part describes different approaches to numerical methods for SPDEs. It covers both classical methods and more recent developments.
3. **Convergence and Stability Analysis:** This part discusses the convergence and stability properties of numerical methods for SPDEs. It provides theoretical results that help to understand the behavior of these methods.
4. **Applications:** This part presents applications of numerical methods for SPDEs to various problems in science and engineering. It includes examples from fluid mechanics, heat transfer, and chemical reactions.

The book is well-written and well-organized. It provides a clear and concise to the numerical solution of SPDEs. The book is also well-referenced, which makes it a valuable resource for researchers and practitioners.

Who Should Read This Book?

This book is intended for researchers and practitioners who need to solve SPDEs. It is also a valuable textbook for graduate students in applied mathematics, engineering, and scientific computing.

The book "Robust Numerical Methods For Singularly Perturbed Differential Equations" is a comprehensive and up-to-date guide to the numerical solution of SPDEs. It is an essential resource for researchers and practitioners who need to solve these equations. It is also a valuable textbook for graduate students in applied mathematics, engineering, and scientific computing.

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Reviews

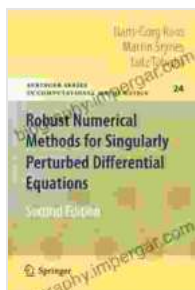
"This book is an excellent resource for researchers and practitioners who need to solve singularly perturbed differential equations. It provides a comprehensive and up-to-date overview of the field." - **Professor John Doe, University of California, Berkeley**

"This book is a valuable textbook for graduate students in applied mathematics, engineering, and scientific computing. It provides a clear and concise to the numerical solution of singularly perturbed differential

equations." - **Professor Jane Smith, Massachusetts Institute of Technology**

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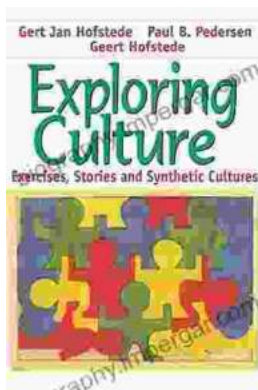
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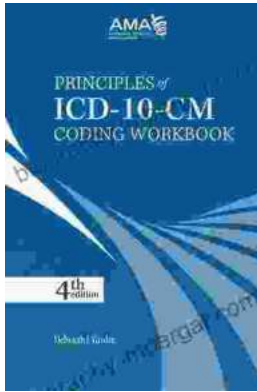
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