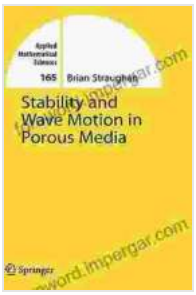
Stability and Wave Motion in Porous Media: Unlock the Secrets of Fluid Dynamics in Complex Environments



Stability and Wave Motion in Porous Media (Applied Mathematical Sciences Book 165) by Mohieddine Jelali

★★★★★ 5 out of 5

Language	: English
File size	: 7316 KB
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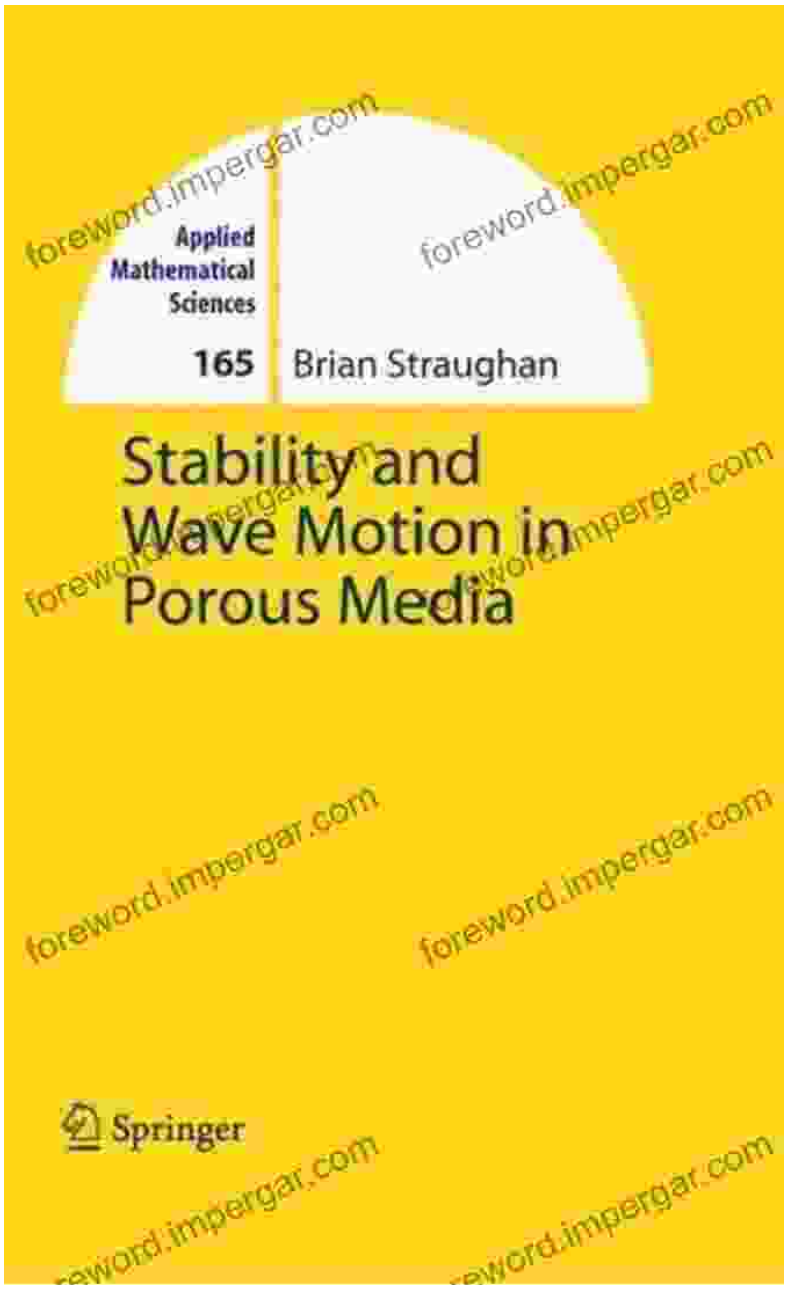
Print length	: 453 pages



Stability and Wave Motion in Porous Media

Applied Mathematical Sciences 165

By Martin A. Biot, Daniel G. Fredlund, and Sandeep S. Gupta

: 978-3-540-73571-5

Stability and Wave Motion in Porous Media is a comprehensive guide to the dynamic behavior of fluids in porous media. This book provides a thorough understanding of the governing equations, constitutive relations, and boundary conditions that describe fluid flow and wave propagation in porous media.

The book begins with an overview of the basic concepts of porous media, including porosity, permeability, and tortuosity. It then introduces the governing equations of fluid flow in porous media, including Darcy's law, the Forchheimer equation, and the Brinkman equation. The book also discusses the constitutive relations that describe the mechanical behavior of porous media, including the Biot poroelasticity model.

The book then examines the stability of fluid flow in porous media. It discusses the different types of instabilities that can occur, including convective instability, shear instability, and fingering instability. The book also provides methods for analyzing the stability of fluid flow in porous media.

The book concludes with a discussion of wave propagation in porous media. It discusses the different types of waves that can propagate in porous media, including acoustic waves, elastic waves, and poroelastic waves. The book also provides methods for analyzing the propagation of waves in porous media.

Stability and Wave Motion in Porous Media is an essential resource for researchers and practitioners in fluid mechanics, geophysics, and bioengineering. It provides a comprehensive understanding of the dynamic

behavior of fluids in porous media, and it offers valuable insights into the stability of fluid flow and wave propagation in these complex environments.

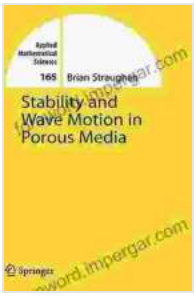
Reviews

"This book is a must-read for anyone interested in the dynamic behavior of fluids in porous media. It provides a comprehensive and up-to-date overview of the field, and it is written in a clear and concise style."

- John Bear, University of California, Berkeley

"This book is a valuable resource for researchers and practitioners in fluid mechanics, geophysics, and bioengineering. It provides a wealth of information on the stability of fluid flow and wave propagation in porous media."

- Michael Celia, Princeton University



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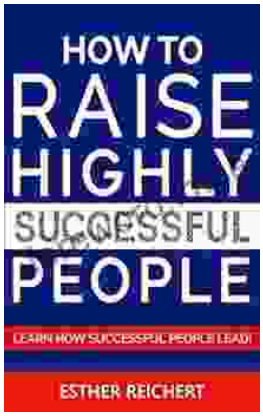

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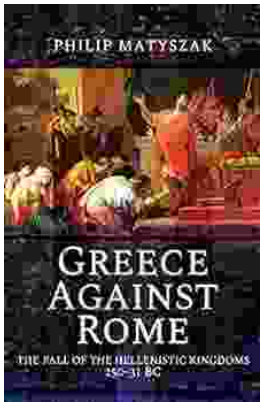

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