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Sinopsis

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The mathematical material is treated in a non-abstract manner and is fully illuminated by the underlying mechanical ideas

The presentation is concise but complete, and is intended for specialists in continuum mechanics who wish to understand the mathematical underpinnings of the discipline

Exercises and examples are included throughout with detailed solutions provided in the appendix
This book offers a brief, practically complete, and relatively simple introduction to functional analysis. It also illustrates the application of functional analytic methods to the science of continuum mechanics. Abstract but powerful mathematical notions are tightly interwoven with physical ideas in the treatment of nontrivial boundary value problems for mechanical objects.

This second edition includes more extended coverage of the classical and abstract portions of functional analysis. Taken together, the first three chapters now constitute a regular text on applied functional analysis. This potential use of the book is supported by a significantly extended set of exercises with hints and solutions. A new appendix, providing a convenient listing of essential inequalities and imbedding results, has been added.

The book should appeal to graduate students and researchers in physics, engineering, and applied mathematics.

Reviews of first edition:

"This book covers functional analysis and its applications to continuum mechanics. The presentation is concise but complete, and is intended for readers in continuum mechanics who wish to understand the mathematical underpinnings of the discipline. . . . Detailed solutions of the exercises are provided in an appendix." (L'Enseignement Mathématique, Vol. 49 (1-2), 2003)

"The reader comes away with a profound appreciation both of the physics and its importance, and of the beauty of the functional analytic method, which, in skillful hands, has the power to

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dissolve and clarify these difficult problems as peroxide does clotted blood. Numerous exercises . . . test the reader's comprehension at every stage. Summing Up: Recommended." (F. E. J. Linton, Choice, September, 2003)

Content Level » Research

Keywords » Banach-Steinhaus Principle - Metric Spaces - Von Karman Equations

Related subjects » Analysis - Classical Continuum Physics - Dynamical Systems & Differential Equations - Mechanics