FRACTIONAL CALCULUS AND WAVES IN LINEAR VISCOELASTICITY

An Introduction to Mathematical Models

by **Francesco Mainardi** *(University of Bologna, Italy)*

This monograph provides a comprehensive overview of the author's work on the fields of fractional calculus and waves in linear viscoelastic media, which includes his pioneering contributions on the applications of special functions of the Mittag-Leffler and Wright types.

It is intended to serve as a general introduction to the above-mentioned areas of mathematical modeling. The explanations in the book are detailed enough to capture the interest of the curious reader, and complete enough to provide the necessary background material needed to delve further into the subject and explore the research literature given in the huge general bibliography.

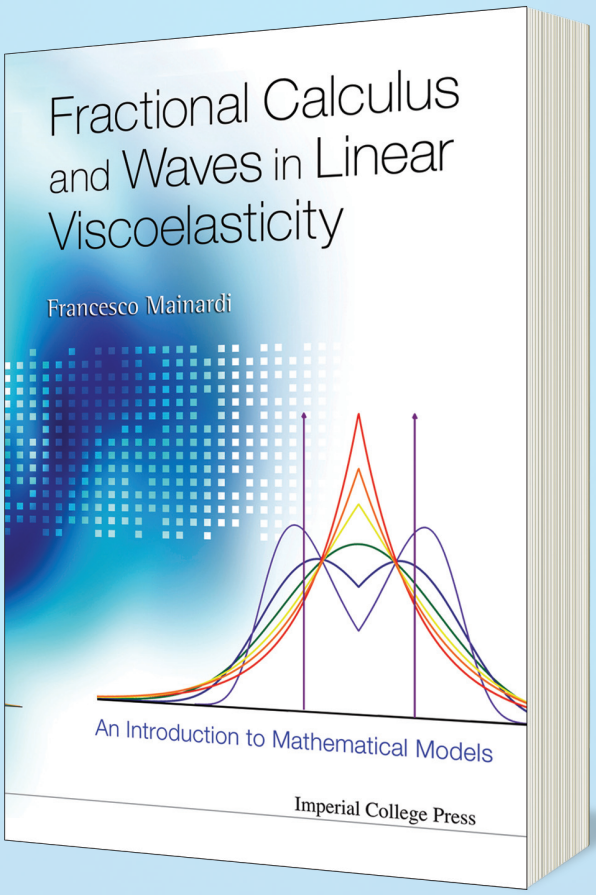
This book will be of interest to applied scientists and engineers.

Contents:

- Essentials of Fractional Calculus
- Essentials of Linear Viscoelasticity
- Fractional Viscoelastic Models
- Waves in Linear Viscoelastic Media: Dispersion and Dissipation
- Waves in Linear Viscoelastic Media: Asymptotic Representations
- Diffusion and Wave–Propagation via Fractional Calculus
- Appendices:
    - The Eulerian Functions
    - The Bessel Functions
    - The Error Functions
    - The Exponential Integral Functions
    - The Mittag-Leffler Functions
    - The Wright Functions

Key Features

- Contains accessible mathematical language for easy understanding
- Features ample examples to reiterate concepts in the book
- Makes extensive use of graphical images
- Includes a large and informative general bibliography for further research



Readership: Graduate and PhD students in applied mathematics, classical physics, mechanical engineering and chemical physics.

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