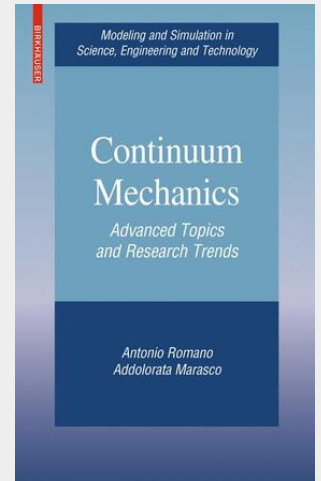


## Continuum Mechanics

Advanced Topics and Research Trends

In the companion book (Continuum Mechanics Using Mathematica) to this volume, we explained the foundations of continuum mechanics and described some basic applications of fluid dynamics and linear elasticity. However, deciding on the approach and content of this book, Continuum Mechanics: Advanced Topics and Research Trends, proved to be a more difficult task. After a long period of reflection, we made the decision to direct our efforts into drafting a book that demonstrates the flexibility and great potential of continuum physics to describe the wide range of macroscopic phenomena that we can observe. It is the opinion of the authors that this is the most stimulating way to learn continuum mechanics. However, it is also quite evident that this aim cannot be fully realized in a single book. Consequently, in this book we chose to present only the basics of interesting continuum mechanics models, along with some important applications of them. We assume that the reader is familiar with all of the basic principles of continuum mechanics: the general balance laws, constitutive equations, isotropy groups for materials, the laws of thermodynamics, ordinary waves, etc. All of these concepts can be found in Continuum Mechanics Using Mathematica and many other books. We believe that this book gives the reader a sufficiently wide view of the "boundless forest" of continuum mechanics, before focusing his or her attention on the beauty and complex structure of single trees within it (indeed, we could say that Continuum Mechanics Using Mathematica provides only the fertile humus on which the trees of this forest take root!).

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