Título:

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Precio: $1904.30

Editorial:

Año: 2010

Tema:

Edición: 1ª

Sinopsis

ISBN: 9781441956941

n their 1909 publication Théorie des corps déformables, Eugène and François Cosserat made a historic contribution to materials science by establishing the fundamental principles of the mechanics of generalized continua. The chapters collected in this volume showcase the many areas of continuum mechanics that grew out of the foundational work of the Cosserat brothers.

The included contributions provide a detailed survey of the most recent theoretical developments in the field of generalized continuum mechanics. The diverse topics covered include: the properties of Cosserat media, micromorphic bodies, micropolar solids and fluids, weakly- and strongly-nonlocal theories, gradient theories of elasticity and plasticity, defect theory, everywhere-defective materials, bodies with fractal structure, as well as other related topics.

Key features:

- Focuses on recent developments in continuum mechanics and materials design, including numerical examples and newly developed models.

- Presents numerical examples to demonstrate the efficiency of various solution techniques.

- Provides a unique overview of generalized continuum mechanics, illustrating the important applications of this theory in various other scientific disciplines.

- Includes a foreword written by renowned physicist and materials scientist A.C. Eringen.

Mechanics of Generalized Continua can serve as a useful reference for graduate students and researchers in mechanical engineering, materials science, applied physics and applied mathematics.