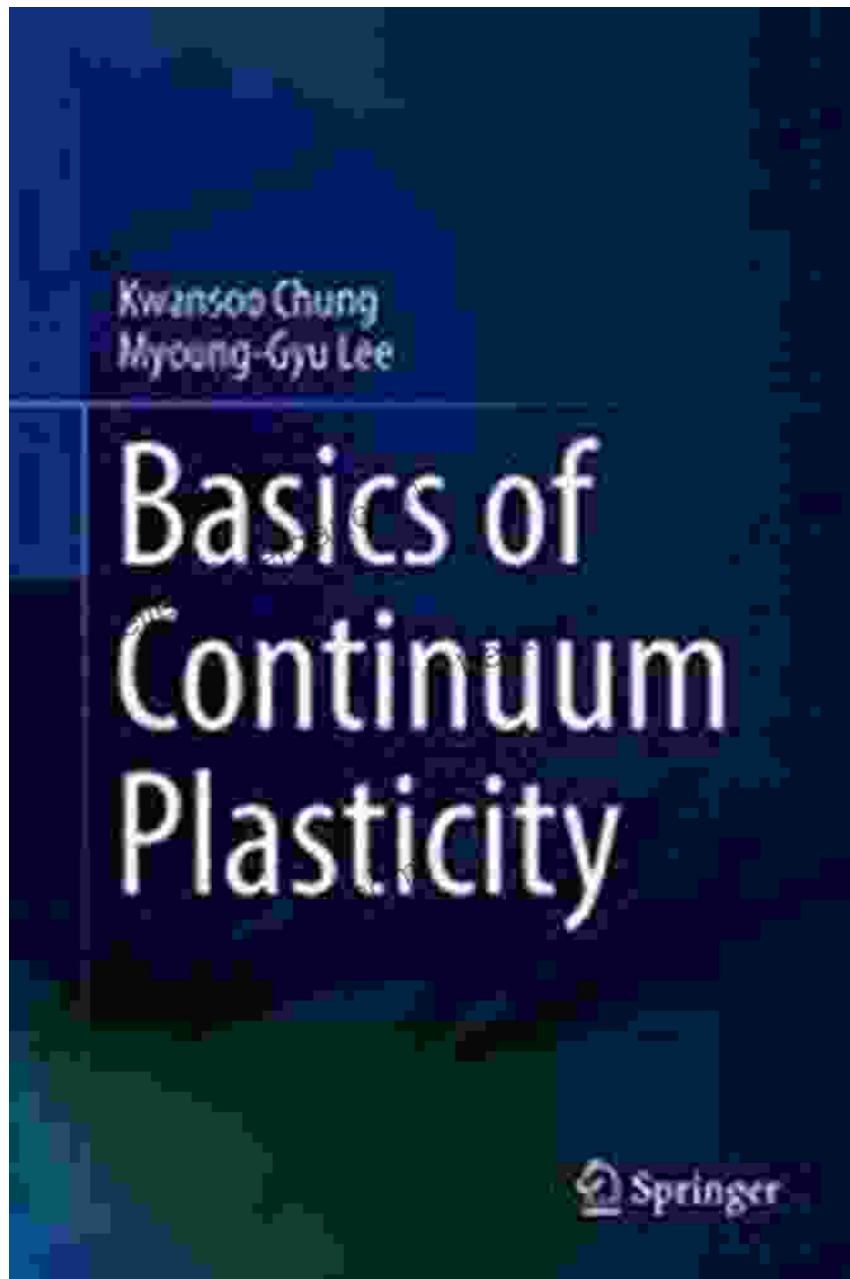
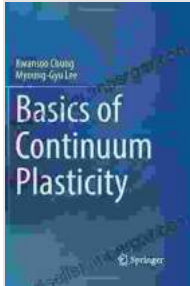


# Unlock the Secrets of Plasticity: A Comprehensive Guide to Basics of Continuum Plasticity by Enrico Fermi



Enrico Fermi, a pioneer in nuclear physics and winner of the Nobel Prize, has authored a remarkable work that has become a fundamental reference

in the field of plasticity: Basics of Continuum Plasticity. This comprehensive treatise provides a thorough understanding of the subject, from its theoretical foundations to its practical applications.



## Basics of Continuum Plasticity by Enrico Fermi

★★★★★ 5 out of 5

Language	: English
File size	: 59588 KB
Text-to-Speech	: Enabled
Screen Reader	: Supported
Enhanced typesetting	: Enabled
Word Wise	: Enabled
Print length	: 499 pages



## What is Continuum Plasticity?

Continuum plasticity is a branch of mechanics that deals with the deformation of solid materials subjected to stresses beyond their elastic limits. It plays a crucial role in various engineering disciplines, including structural engineering, materials science, and manufacturing.

## Content and Structure

Basics of Continuum Plasticity is organized into six chapters, each covering a specific aspect of the subject:

**Chapter 1:** This chapter introduces the basic concepts of continuum plasticity, including stress, strain, and yield criteria. It also discusses the different types of plastic deformation and the fundamental laws that govern them.

**Chapter 2: Mathematical Theory of Plasticity** Chapter 2 delves into the mathematical framework of continuum plasticity. It presents tensorial formulations, constitutive equations, and flow rules that describe the behavior of plastic materials.

**Chapter 3: Applications of Plasticity to Engineering Problems** This chapter explores practical applications of continuum plasticity to solve engineering problems. It covers topics such as plastic hinges, limit analysis, and shakedown theorems.

**Chapter 4: Plastic Waves** Chapter 4 investigates the phenomenon of plastic waves, which are generated by sudden loading or impact. It discusses the mechanics of wave propagation, shock waves, and the effects of plastic waves on materials.

**Chapter 5: Plastic Instability and Localization** This chapter examines plastic instability and localization, which can lead to failure in structural components. It discusses the different mechanisms that contribute to these phenomena, as well as methods for predicting their occurrence.

**Chapter 6: Advanced Topics in Plasticity** The final chapter covers advanced topics in plasticity, such as non-associated plasticity, viscoplasticity, and damage plasticity. It provides an overview of recent research and emerging trends in the field.

## **Key Features**

\* Comprehensive coverage of continuum plasticity, from basic concepts to advanced theories  
\* In-depth mathematical derivations and theoretical explanations  
\* Numerous examples and case studies illustrate practical

applications \* Authored by Enrico Fermi, a Nobel laureate and pioneer in nuclear physics \* Suitable as a textbook for graduate students or a reference book for researchers and practitioners

## **Target Audience**

Basics of Continuum Plasticity is an invaluable resource for:

\* Graduate students in mechanical engineering, materials science, and civil engineering \* Researchers in the field of plasticity \* Engineers and designers involved in structural analysis, materials selection, and failure prevention

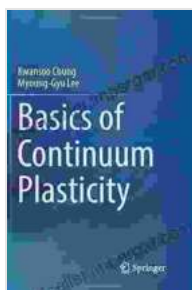
## **Benefits of Reading this Book**

By reading Basics of Continuum Plasticity, readers will:

\* Gain a comprehensive understanding of the fundamental concepts of continuum plasticity \* Develop a strong mathematical foundation for analyzing plastic deformation \* Enhance their ability to solve engineering problems involving plasticity \* Stay abreast of the latest advancements and research in the field \* Improve their overall knowledge and expertise in materials science and mechanics

Basics of Continuum Plasticity by Enrico Fermi is an essential guide for anyone seeking a comprehensive understanding of this fundamental branch of mechanics. Its rigorous mathematical treatment, practical examples, and coverage of advanced topics make it an invaluable resource for students, researchers, and practitioners alike. By delving into the principles and applications of continuum plasticity, readers will gain

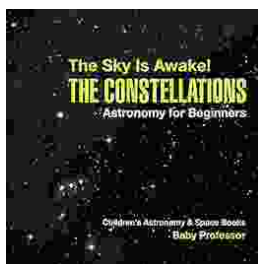
invaluable insights into the behavior of materials and equip themselves to address complex engineering challenges with confidence.



## Basics of Continuum Plasticity by Enrico Fermi

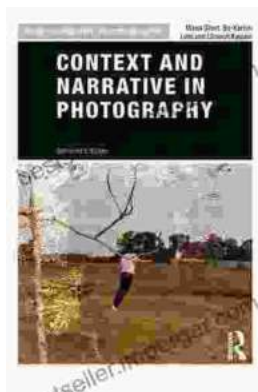
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