

<<工程有限元分析>>

图书基本信息

书名 : <<工程有限元分析>>

13位ISBN编号 : 9787512410183

10位ISBN编号 : 7512410182

出版时间 : 2013-1

出版时间 : 北京航空航天大学出版社

作者 : 崔德渝 , 徐元铭 著

页数 : 323

版权说明 : 本站所提供之下载的PDF图书仅提供预览和简介,请支持正版图书。

更多资源请访问 : <http://www.tushu007.com>

<<工程有限元分析>>

内容概要

This textbook presents the necessary concepts , principles and general procedure of Finite Element Method (FEM) which are primarily applied for linearly elastic structural analysis including plane problems , axisymmetric problems , space problems , plates and shells and fracture mechanics. The FEM of heat transfer in brief is also incorporated. Some straightforward examples are introduced to demonstrate a complete and detailed finite element procedure. The aim of the text is to provide the fundamental theories and numerical methodology in finite element analysis. It focuses on the derivation of key governing equations of the FEM and its engineering application. This text can be regarded as a text or reference book for the university under- and post-graduate students or engineers whose majors are related to mechanics , aerospace , mechanical and civil engineering , heat transfer and so on.

<<工程有限元分析>>

书籍目录

Chapter 1 Introduction to Finite Element Method
1.1 Basic Concept of Finite Element Method
1.2 General Description of Finite Element Method
1.2.1 Finite Element Technique in Structure Analysis
1.2.2 Finite Element Technique in Heat Conduction
1.2.3 Summary
1.3 Engineering Applications of Finite Element Analysis
1.4 Principle of Virtual Displacements and Variational Approach
1.4.1 Principle of Virtual Displacements (PVD)
1.4.2 Variational Formulation
Problem Set 1
Chapter 2 General Procedure of Finite Element Method
2.1 Interpolation Functions
2.2 Strain-displacement Relations
2.3 Stress-strain Relations (Constitutive Relations)
2.4 Governing Equations in Finite Element Analysis
2.5 Stiffness Matrices
2.5.1 Element Stiffness Matrix
2.5.2 Global Stiffness Matrix
2.6 Equivalent Nodal Force Vectors
2.6.1 Element Equivalent Nodal Force Vector
2.6.2 Global Equivalent Nodal Force Vector
2.7 Imposition of Boundary Condition
2.8 Numerical Examples
2.9 Area Coordinates
2.10 Six-node Triangular Elements
2.11 Linear Rectangular Elements
Problem Set 2
Chapter 3 Formulation of Isoparametric Finite Element Matrices
3.1 Isoparametric Concepts
3.2 Construction of Interpolation Functions
3.2.1 The Pascal Triangle
3.2.2 Lagrange Polynomials
3.2.3 Lagrange Polynomials in Dimensionless Form
3.3 Family of Two-dimensional Isoparametric Elements
3.4 Formulation of Isoparametric Finite Element Matrices for Plane Elasticity
3.4.1 Interpolation Functions
3.4.2 Strain-displacement Transformation Matrix
3.4.3 Constitutive Relations
3.4.4 Element Stiffness Matrix
3.4.5 Element Load Vector
3.5 Isoparametric Triangular Elements in Terms of Area Coordinates
Problem Set 3
Chapter 4 Stress Analysis of Axisymmetric Problems
4.1 Interpolation Functions
4.2 Strain-displacement Relations
4.3 Stress-strain Relations
4.4 Element Stiffness Matrix
4.5 Element Equivalent Nodal Force Vector
4.6 Four-node Rectangular Ring Element
4.7 A Numerical Example
Problem Set 4
Chapter 5 Analysis of Three-dimensional Problems
5.1 Convergence Considerations
5.2 Shape Functions for Three-dimensional Elements
5.2.1 Shape Functions for Tetrahedron Elements
5.2.2 Shape Functions for Three-dimensional Hexahedral Elements
5.3 Formulation of Three-dimensional Isoparametric Element Matrices
5.3.1 Interpolation Functions.....
Chapter 6 Finite Element Analysis for Plates and Shells
Chapter 7 Finite Element Analysis in Fracture Mechanics
Chapter 8 Heat Transfer
References

<<工程有限元分析>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>