

1. Record Nr.	UNINA9910459829403321
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Titolo	Large strain finite element method : a practical course // Antonio Munjiza, Esteban Rougier, Earl E. Knight
Pubbl/distr/stampa	Chichester, West Sussex : , : John Wiley & Sons, Inc., , 2015
ISBN	1-118-53580-4 1-118-53570-7 1-118-53579-0
Descrizione fisica	1 online resource (488 p.)
Disciplina	620.1/1230151825
Soggetti	Finite element method Stress-strain curves Deformations (Mechanics) - Mathematical models Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Large Strain Finite Element Method: A Practical Course; Copyright; Contents; Preface; Acknowledgements; Part One Fundamentals; Chapter 1 Introduction; 1.1 Assumption of Small Displacements; 1.2 Assumption of Small Strains; 1.3 Geometric Nonlinearity; 1.4 Stretches; 1.5 Some Examples of Large Displacement Large Strain Finite Element Formulation; 1.6 The Scope and Layout of the Book; 1.7 Summary; Further Reading; Chapter 2 Matrices; 2.1 Matrices in General; 2.2 Matrix Algebra; 2.3 Special Types of Matrices; 2.4 Determinant of a Square Matrix; 2.5 Quadratic Form; 2.6 Eigenvalues and Eigenvectors 2.7 Positive Definite Matrix 2.8 Gaussian Elimination; 2.9 Inverse of a Square Matrix; 2.10 Column Matrices; 2.11 Summary; Further Reading; Chapter 3 Some Explicit and Iterative Solvers; 3.1 The Central Difference Solver; 3.2 Generalized Direction Methods; 3.3 The Method of Conjugate Directions Conjugate Directions; 3.4 Summary; Further Reading; Chapter 4 Numerical Integration; 4.1 Newton-Cotes Numerical Integration; 4.2 Gaussian Numerical Integration; 4.3 Gaussian Integration in 2D; 4.4 Gaussian Integration in 3D Gaussian Integration in 3D; 4.5 Summary; Further Reading

Chapter 5 Work of Internal Forces on Virtual Displacements 5.1 The Principle of Virtual Work; 5.2 Summary; Further Reading; Part Two Physical Quantities; Chapter 6 Scalars; 6.1 Scalars in General; 6.2 Scalar Functions Scalar Functions; 6.3 Scalar Graphs Scalar Graphs; 6.4 Empirical Formulas; 6.5 Units; 6.6 Units; 6.7 Base and Derived Scalar Variables; 6.8 Summary; Further Reading; Chapter 7 Vectors in 2D; 7.1 Vectors in General; 7.2 Vector Notation; 7.3 Matrix Representation of Vectors; 7.4 Scalar Product; 7.5 General Vector Base in 2D; 7.6 Dual Base; 7.7 Changing Vector Base  
7.8 Self-duality of the Orthonormal Base 7.9 Combining Bases; 7.10 Examples; 7.11 Summary; Further Reading; Chapter 8 Vectors in 3D; 8.1 Vectors in 3D; 8.2 Vector Bases; 8.3 Summary; Further Reading; Chapter 9 Vectors in n-Dimensional Space; 9.1 Extension from 3D to 4-Dimensional Space; 9.2 The Dual Base in 4D; 9.3 Changing the Base in 4D; 9.4 Generalization to n-Dimensional Space; 9.5 Changing the Base in n-Dimensional Space; 9.6 Summary; Further Reading; Chapter 10 First Order Tensors; 10.1 The Slope Tensor Slope Tensor; 10.2 First Order Tensors in 2D; 10.3 Using First Order Tensors  
10.4 Using Different Vector Bases in 2D 10.5 Differential of a 2D Scalar Field as the First Order Tensor; 10.6 First Order Tensors in 3D; 10.7 Changing the Vector Base in 3D; 10.8 First Order Tensor in 4D; 10.9 First Order Tensor in n-Dimensions; 10.10 Differential of a 3D Scalar Field as the First Order Tensor; 10.11 Scalar Field in n-Dimensional Space; 10.12 Summary; Further Reading; Chapter 11 Second Order Tensors in 2D; 11.1 Stress Tensor in 2D; 11.2 Second Order Tensor in 2D; 11.3 Physical Meaning of Tensor Matrix in 2D; 11.4 Changing the Base; 11.5 Using Two Different Bases in 2D  
11.6 Some Special Cases of Stress Tensor Matrices in 2D

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Sommario/riassunto

An introductory approach to the subject of large strains and large displacements in finite elements. Large Strain Finite Element Method: A Practical Course, takes an introductory approach to the subject of large strains and large displacements in finite elements and starts from the basic concepts of finite strain deformability, including finite rotations and finite displacements. The necessary elements of vector analysis and tensorial calculus on the lines of modern understanding of the concept of tensor will also be introduced. This book explains how tensors and vectors can be described us

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