1. Record Nr. UNINA9910452742803321 Autore Zienkiewicz O. C Titolo The finite element method: its basis and fundamentals // O.C. Zienkiewicz, R.L. Taylor, J.Z. Zhu Pubbl/distr/stampa Oxford, UK:,: Butterworth-Heinemann,, [2013] ©2013 **ISBN** 1-85617-630-4 0-08-095135-X Edizione [Seventh edition.] 1 online resource (xxxviii, 714 p.) Descrizione fisica Altri autori (Persone) TaylorR. L ZhuJ. Z Disciplina 620/.00151825 Soggetti Structural analysis (Engineering) Continuum mechanics Finite element method 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 indexes. Nota di contenuto Half Title; Author Biography; Title Page; Copyright; Dedication; Contents; List of Figures; List of Tables; Preface; 1 The Standard Discrete System and Origins of the Finite Element Method; 1.1 Introduction; 1.2 The structural element and the structural system; 1.3 Assembly and analysis of a structure; 1.4 The boundary conditions; 1.5 Electrical and fluid networks; 1.6 The general pattern; 1.7 The standard discrete system; 1.8 Transformation of coordinates; 1.9 Problems; References: 2 Problems in Linear Elasticity and Fields; 2.1 Introduction; 2.2 Elasticity equations 2.2.1 Displacement function 2.2.2 Strain matrix; 2.2.2.1 Straindisplacement matrix; 2.2.2.2 Volume change and deviatoric strain; 2.2.3 Stress matrix; 2.2.3.1 Mean stress and deviatoric stress; 2.2.4 Equilibrium equations; 2.2.4.1 Plane stress and plane strain problems; 2.2.4.2 Axisymmetric problems; 2.2.5 Boundary conditions; 2.2.5.1 Boundary conditions on inclined coordinates: 2.2.5.2 Normal pressure

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## Sommario/riassunto

The Finite Element Method: Its Basis and Fundamentals offers a complete introduction to the basis of the finite element method, covering fundamental theory and worked examples in the detail required for readers to apply the knowledge to their own engineering problems and understand more advanced applications. This edition sees a significant rearrangement of the book's content to enable clearer development of the finite element method, with major new chapters and sections added to cover: Weak forms Variational forms Multi-dimensional field prob