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| Autore | Zienkiewicz O. C |
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loading; 2.2.5.3 Symmetry and repeatability; 2.2.6 Initial conditions; 2.2.7 Transformation of stress and strain; 2.2.7.1 Energy; 2.2.8 Stress-strain relations: Elasticity matrix
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3.2 One-dimensional form of elasticity3.2.1 Weak form of equilibrium equation; 3.2.1.1 Adjoint forms; 3.3 Approximation to integral and weak forms: The weighted residual (Galerkin) method; 3.3.1 Galerkin solution of elasticity equation; 3.4 Finite element solution; 3.4.1 Requirements for finite element approximations; 3.5 Isoparametric form; 3.5.1 Higher order elements: Lagrange interpolation; 3.5.1.1 Linear shape functions; 3.5.1.2 Quadratic shape functions; 3.5.2 Integrals on the parent element: Numerical integration; 3.6 Hierarchical interpolation; 3.7 Axisymmetric one-dimensional problem
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4 Variational Forms and Finite Element Approximation: 1-D Problems

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