1.

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Autore	Kuwahara, J.
Titolo	The Metzgeriaceae of the Neotropics / by J. Kuwahara
Pubbl/distr/stampa	Berlin : J. Cramer, 1986
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2.

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Autore	Bergheau Jean-Michel
Titolo	Finite element simulation of heat transfer [[electronic resource] /] / Jean-Michel Bergheau, Roland Fortunier
Pubbl/distr/stampa	London, : ISTE Ltd. Hoboken, N.J., : J. Wiley, c2008
ISBN	1-282-16521-6 9786612165214 0-470-61141-3 0-470-39403-X
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Altri autori (Persone)	FortunierRoland
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Finite Element Simulation of Heat Transfer; Table of Contents; Introduction; PART 1. Steady State Conduction; Chapter 1. Problem Formulation; 1.1. Physical modeling; 1.1.1. Thermal equilibrium equation; 1.1.2. Fourier law; 1.1.3. Boundary conditions; 1.2. Mathematical analysis; 1.2.1. Weighted residual method; 1.2.2.Weak integral formulation; 1.3. Working example; 1.3.1. Physical modeling; 1.3.2. Direct methods; 1.3.2.1. Analytical integration; 1.3.2.2. The finite difference method; 1.3.3. Collocation methods; 1.3.3.1. Point collocation; 1.3.3.2. Sub-domain collocation; 1.3.4.Galerkin method 1.3.4.1. Polynomial functions1.3.4.2. Piecewise linear functions; Chapter 2. The Finite Element Method; 2.1. Finite element approximation; 2.1.1.Mesh; 2.1.2. Nodal approximation; 2.2.Discrete problem formulation; 2.2.1. Element quantities; 2.2.2. Assembly; 2.3. Solution; 2.3.1. Application of temperature boundary conditions; 2.3.2. Linear system solution; 2.3.2.1. Direct methods; 2.3.2.2. Iterative methods; 2.3.3. Storing the linear system matrix; 2.3.4. Analysis of results; 2.3.4.1. Smoothing the heat flux density; 2.3.4.2. Result accuracy; 2.4. Working example 2.4.1. Finite element approximation2.4.1.1.Mesh; 2.4.1.2. Nodal approximation; 2.4.2.Discrete problem formulation; 2.4.2.1. Element quantities; 2.4.2.2. Assembly; 2.4.3. Solution; 2.4.3.1. Application of boundary conditions; 2.4.3.2. Solution; Chapter 3. Isoparametric Finite Elements; 3.1. Definitions; 3.1.1. Reference element; 3.1.1.1. Triangular element with linear transformation functions; 3.1.1.2. Quadrangle element with linear transformation functions; 3.1.1.3. Quadrangle element with quadratic transformation functions; 3.1.2. Isoparametric elements 3.1.3. Interpolation function properties3.2. Calculation of element quantities; 3.2.1. Expression in the reference frame; 3.2.2. Gaussian quadrature; 3.2.2.1. 1D numerical integration; 3.2.2.2. 2D and 3D numerical integration; 3.3. Some finite elements; PART 2. Transient State, Non-linearities, Transport Phenomena; Chapter 4. Transient Heat Conduction; 4.1. Problem formulation; 4.1.1. The continuous problem; 4.1.2. Finite element approximation; 4.1.3. Linear case; 4.2.Time integration; 4.2.1. Modal method; 4.2.1.1. Determining the modal basis; 4.2.1.2. Projection on the modal basis 4.2.2.Direct time integration4.2.3. Accuracy and stability of a direct integration algorithm; 4.2.3.1. Accuracy; 4.2.3.2. Stability; 4.2.3.3. Simplified analysis of the stability condition; 4.2.4. Practical complementary rules; 4.2.4.1. Space oscillations during thermal shock simulation; 4.2.4.2. Discrete maximum principle; 4.2.4.3. Initial temperatures during thermal contact simulation; 4.3. Working example; 4.3.1. Physical modeling and approximation; 4.3.2. Numerical applications; Chapter 5. Non-linearities; 5.1. Formulation and solution techniques; 5.1.1. Formulation 5.1.2. Non-linear equation system solution methods
Sommario/riassunto	This book introduces the finite element method applied to the resolution of industrial heat transfer problems. Starting from steady conduction, the method is gradually extended to transient regimes, to traditional non-linearities, and to convective phenomena. Coupled problems involving heat transfer are then presented. Three types of couplings are discussed: coupling through boundary conditions (such as radiative heat transfer in cavities), addition of state variables (such as metallurgical phase change), and coupling through partial differential equations (such as electrical phenomena).? A re