1. Record Nr. UNINA9910349507703321

Autore	Sobotka Jerzy
Titolo	Reservoir Rock Diagnostics for Water or Hydrocarbon Exploration : Acoustic and Electric Fields Interaction Phenomena in Geophysical Research (Seismoelectric & Electroseismic Effect) / / by Jerzy Sobotka
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-31049-3
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (XVI, 115 p.)
Collana	GeoPlanet: Earth and Planetary Sciences, , 2190-5193
Disciplina	550 622.15
Soggetti	Geophysics Hydrogeology Geotechnical engineering Geophysics and Environmental Physics Geophysics/Geodesy Geotechnical Engineering & Applied Earth Sciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	This book presents a study that establishes a set of diagnostic parameters for characterizing the behavior of a geological medium stimulated by external fields and their interactions as a physical basis for developing new methods in exploration geophysics. It describes in detail the investigation methods and instruments (including laboratory, field and borehole devices), and discusses experimental, field and modeling investigations of the interaction of mechanic/electromagnetic fields in reservoir rocks. Lastly, the book also evaluates and the proposed methodology and demonstrates its effectiveness using case studies in which certain geophysical diagnostic/exploration problems have been solved.

2. Record Nr. UNINA9911006699703321

Autore	Zienkiewicz O. C
Titolo	Finite Elements and Approximation
Pubbl/distr/stampa	Newburyport, : Dover Publications, 2013
ISBN	9781523125074 1523125071 9780486318011 048631801X
Edizione	[1st ed.]
Descrizione fisica	1 online resource (574 p.)
Collana	Dover Books on Engineering
Altri autori (Persone)	MorganK
Disciplina	511/.4
Soggetti	Approximation theory Finite element method Engineering & Applied Sciences Applied Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	Cover; Title Page; Copyright Page; Table of Contents; 1. Continuum Boundary Value Problems and The Need for Numerical Discretization. Finite Difference Methods; 1.1. Introduction,; 1.2. Some Examples of Continuum Problems,; 1.3. Finite Differences in One Dimension,; 1.4. Derivative Boundary Conditions,; 1.5. Nonlinear Problems,; 1.6. Finite Differences in More Than One Dimension,; 1.7. Problems Involving Irregularly Shaped Regions,; 1.8. Nonlinear Problems in More Than One Dimension,; 1.9. Approximation and Convergence,; 1.10. Concluding Remarks,; References,; Suggested Further Reading, 2. Weighted Residual Methods: Use of Continuous Trial Functions2.1. Introduction-Approximation by Trial Functions,; 2.2. Weighted Residual Approximations,; 2.3. Approximation to the Solutions of Differential Equations and the Use of Trial Function-Weighted Residual Forms. Boundary Conditions Satisfied by Choice of Trial Functions,; 2.4. Simultaneous Approximation to the Solutions of Differential Equations and to the Boundary Conditions,; 2.5. Natural Boundary Conditions,; 2.6. Boundary Solution Methods,; 2.7. Systems of Differential Equations,; 2.8. Nonlinear Problems,

2.9. Concluding Remarks,References,; Suggested Further Reading,; 3. Piecewise Defined Trial Functions and The Finite Element Method; 3.1. Introduction-The Finite Element Concept,; 3.2. Some Typical Locally Defined Narrow-Base Shape Functions,; 3.3. Approximation to Solutions of Differential Equations and Continuity Requirements,; 3.4. Weak Formulation and the Galerkin Method,; 3.5. Some One-Dimensional Problems,; 3.6. Standard Discrete System. A Physical Analogue of the Equation Assembly Process,; 3.7. Generalization of the Finite Element Concepts for Two- and Three-Dimensional Problems, 3.8. The Finite Element Method for Two-Dimensional Heat Conduction Problems,3.9. Two-Dimensional Elastic Stress Analysis Using Triangular Elements,; 3.10. Are Finite Differences a Special Case of the Finite Element Method?,; 3.11. Concluding Remarks,; References,; Suggested Further Reading,; 4. Higher Order Finite Element Approximation; 4.1. Introduction,; 4.2. Degree of Polynomial in Trial Functions and Convergence Rates,; 4.3. The Patch Test,; 4.4. Standard Higher Order Shape Functions for One-Dimensional Elements with C0 Continuity, 4.5. Hierarchical Forms of Higher Order One-Dimensional Elements with C0 Continuity,4.6. Two-Dimensional Rectangular Finite Element Shape Functions of Higher Order,; 4.7. Two-Dimensional Shape Functions for Triangles,; 4.8. Three-Dimensional Shape Functions,; 4.9. Concluding Remarks,; References,; Suggested Further Reading,; 5. Mapping and Numerical Integration; 5.1. The Concept of Mapping,; 5.2. Numerical Integration,; 5.3. More on Mapping,; 5.4. Mesh Generation and Concluding Remarks,; References,; Suggested Further Reading,; 6. Variational Methods; 6.1. Introduction,
6.2. Variational Principles,

Sommario/riassunto

A powerful tool for the approximate solution of differential equations, the finite element is extensively used in industry and research. This book offers students of engineering and physics a comprehensive view of the principles involved, with numerous illustrative examples and exercises.Starting with continuum boundary value problems and the need for numerical discretization, the text examines finite difference methods, weighted residual methods in the context of continuous trial functions, and piecewise defined trial functions and the finite element method. Additional topics include higher o