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Titolo	Thermo-Hydro-Mechanical-Chemical Processes in Fractured Porous Media: Modelling and Benchmarking [[electronic resource] ] : Closed-Form Solutions // edited by Olaf Kolditz, Hua Shao, Wenqing Wang, Sebastian Bauer
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Nota di contenuto	Contents; Contributing Authors; 1 Introduction; 1.1 Motivation; 1.2 Application Areas; 1.3 Scope of This Book; References; Part I Closed Form Solutions; 2 Verification Tests; 2.1 Heat Conduction; 2.1.1 A 1D Steady-State Temperature Distribution, Boundary Conditions of 1st Kind; 2.1.2 A 1D Steady-State Temperature Distribution, Boundary Conditions of 1st and 2nd Kind; 2.1.3 A 2D Steady-State Temperature Distribution, Boundary Conditions of 1st Kind; 2.1.4 A 2D Steady-State Temperature Distribution, Boundary Conditions of 1st and 2nd Kind; 2.1.5 A 3D Steady-State Temperature Distribution 2.1.6 A Transient 1D Temperature Distribution, Time-Dependent Boundary Conditions of 1st Kind 2.1.7 Transient 1D Temperature Distributions, Time-Dependent Boundary Conditions of 2nd Kind; 2.1.8 Transient 1D Temperature Distributions, Non-Zero Initial Temperature, Boundary Conditions of 1st and 2nd Kind; 2.1.9 A Transient 2D Temperature Distribution, Non-Zero Initial Temperature, Boundary

Conditions of 1st and 2nd Kind; 2.2 Liquid Flow; 2.2.1 A 1D Steady-State Pressure Distribution, Boundary Conditions of 1st Kind  
2.2.2 A 1D Steady-State Pressure Distribution, Boundary Conditions of 1st and 2nd Kind  
2.2.3 A 2D Steady-State Pressure Distribution, Boundary Conditions of 1st Kind; 2.2.4 A 2D Steady-State Pressure Distribution, Boundary Conditions of 1st and 2nd Kind; 2.2.5 A 3D Steady-State Pressure Distribution; 2.2.6 A Hydrostatic Pressure Distribution; 2.2.7 A Transient 1D Pressure Distribution, Time-Dependent Boundary Conditions of 1st Kind; 2.2.8 Transient 1D Pressure Distributions, Time-Dependent Boundary Conditions of 2nd Kind  
2.2.9 Transient 1D Pressure Distributions, Non-Zero Initial Pressure, Boundary Conditions of 1st and 2nd Kind  
2.2.10 A Transient 2D Pressure Distribution, Non-Zero Initial Pressure, Boundary Conditions of 1st and 2nd Kind; 2.3 Gas Flow; 2.3.1 A 1D Steady-State Gas Pressure Distribution, Boundary Conditions of 1st Kind; 2.3.2 A 1D Steady-State Gas Pressure Distribution, Boundary Conditions of 1st and 2nd Kind; 2.3.3 A 2D Steady-State Gas Pressure Distribution; 2.3.4 A 3D Steady-State Gas Pressure Distribution; 2.4 Deformation Processes; 2.4.1 An Elastic Beam Undergoes Axial Load  
2.4.2 An Elastic Plate Undergoes Simple Shear  
2.4.3 An Elastic Cuboid Undergoes Load Due to Gravity; 2.4.4 Stresses Relax in a Deformed Cube of Norton Material; 2.4.5 A Cube of Norton Material Creeps Under Constant Stress; 2.4.6 A Cube of Norton Material Undergoes Tensile Strain Increasing Linearly with Time; 2.4.7 A Cube of Norton Material Undergoes Compressive Stress Increasing Linearly with Time; 2.5 Mass Transport; 2.5.1 Solute Transport Along Permeable Beams, Hydraulic and Solute Boundary Conditions of 1st and 2nd Kind  
2.5.2 Solute Transport Along Permeable Beams with an Inert, a Decaying, and an Adsorbing Solute, Time-Dependent Boundary Conditions of 1st Kind

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## Sommario/riassunto

The present book provides guidance to understanding complicated coupled processes based on the experimental data available and implementation of developed algorithms in numerical codes. Results of selected test cases in the fields of closed-form solutions (e.g., deformation processes), single processes (such as groundwater flow) as well as coupled processes are presented. It is part of the OpenGeoSys initiative - an open source project to share knowledge and experience in environmental analysis and scientific computation with the community.

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