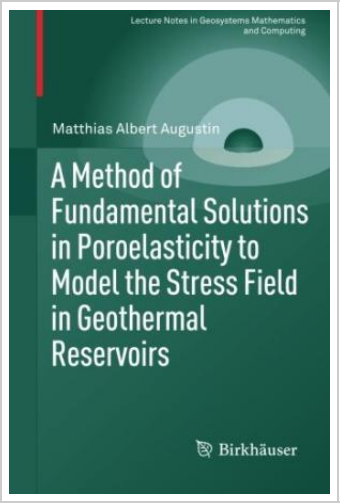

A Method of Fundamental Solutions in Poroelasticity to Model the Stress Field in Geothermal Reservoirs

By Matthias Albert Augustin

Springer-Verlag Gmbh Sep 2015, 2015. Taschenbuch. Book Condition: Neu. 233x154x17 mm. Neuware - This monograph focuses on the numerical methods needed in the context of developing a reliable simulation tool to promote the use of renewable energy. One very promising source of energy is the heat stored in the Earth's crust, which is harnessed by so-called geothermal facilities. Scientists from fields like geology, geo-engineering, geophysics and especially geomathematics are called upon to help make geothermics a reliable and safe energy production method. One of the challenges they face involves modeling the mechanical stresses at work in a reservoir. The aim of this thesis is to develop a numerical solution scheme by means of which the fluid pressure and rock stresses in a geothermal reservoir can be determined prior to well drilling and during production. For this purpose, the method should (i) include poroelastic effects, (ii) provide a means of including thermoelastic effects, (iii) be inexpensive in terms of memory and computational power, and (iv) be flexible with regard to the locations of data points. After introducing the basic equations and their relations to more familiar ones (the heat equation, Stokes equations, Cauchy-Navier equation), the 'method of fundamental solutions' and its...

Reviews

An incredibly amazing ebook with perfect and lucid answers. It is writter in basic terms and never difficult to understand. Its been written in an exceptionally basic way and it is only right after i finished reading this ebook in which in fact modified me, affect the way i really believe.

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Extremely helpful for all class of individuals. Better then never, though i am quite late in start reading this one. I realized this publication from my i and dad suggested this ebook to discover.

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