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Geomechanics and Fluidodynamics

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Book Condition: New. Publisher/Verlag: Springer Netherlands | With Applications to Reservoir Engineering | This monograph is based on subsurface hydrodynamics and applied geomechanics and places them in a unifying framework. It focuses on the understanding of physical and mechanical properties of geomaterials by presenting mathematical models of deformation and fracture with related experiments. | Preface. 1: Deformation and fracture of geomaterials. 1.1 Principles of continuum mechanics. 1.2. Thermodynamics and rheology of geomaterials. 1.3. Dilatant elasto-plasticity of geomaterials. 1.4. Particle rotation effects in granulated materials. 1.5. Brittle fracturing of rocks. 2: Mechanics of saturated geostratum. 2.1. Interpenetrating continua. 2.2. Microstructure and permeability. 2.3. Dynamic poro-elasticity. 2.4. Pore pressure and induced deformation of saturated strata. 2.5. Hydrofailure and hydrofracturing of rocks. 3: Hydrodynamics of reservoirs. 3.1. Basic nonstationary flows of a homogeneous fluid. 3.2. Stationary flows and well spacing. 3.3. Two-phase flows in reservoirs. 3.4. Flows in fractured reservoirs. 3.5. Filter-convective diffusion. 4: Complicated phenomena in reservoirs. 4.1. Miscible and gas-condensate flows. 4.2. Permafrost and gas-hydrate mechanics. 4.3. Electrokinetic effects. 4.4. Physical measurements in wells. 4.5. Rupture in dilating geomaterials. 5: Explosions and seismics in a geostratum. 5.1. Elementary theory of underground explosion. 5.2. Fronts and evolution of seismic waves. 5.3. Seismics...

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