

Discrete Fracture Model For Coupled Flow And Geomechanics

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Discrete Fracture Model For Coupled

A "discrete fracture network" (DFN) refers to a computational model that explicitly represents the geometrical properties of each individual fracture (e.g. orientation, size, position, shape and aperture), and the topological relationships between individual fractures and fracture sets.

An explicitly coupled hydro-geomechanical model for ...

motivation of discrete fracture network (DFN) modeling is the recognition that at every scale, groundwater transport in fractured and carbonate rocks tends to be dominated by a limited number of discrete pathways formed by fractures, karsts, and other discrete features. The DFN approach can thus be defined as "analysis and

Including a Stochastic Discrete Fracture Network into One ...

The discrete fracture networks (DFNs) is quantitatively constructed according to the fracture density and stimulated reservoir area (SRA). This model is used to analyze the temporal/spatial evolution of the gas pressure and the net desorption rate.

The use of discrete fracture networks for modelling ...

The Discrete Fracture Model (DFM) has been widely used to model the flow and transport in natural geological porous formations. Here, we extend the DFM approach to model deformation. The flow equations are discretized using a finite-volume method, and the poroelasticity equations are discretized using a Galerkin finite-element approximation.

An explicitly coupled hydro-geomechanical model for ...

present an explicitly integrated, fully coupled discrete-finite element approach for the simulation of hydraulic fracturing in complex fracture networks. The individual physical processes involved in hydraulic fracturing are identified and addressed as separate modules: a finite element approach for

A New T-H-M-C Model Development for Discrete-Fracture EGS ...

title = "A continuum model for coupled stress and fluid flow in discrete fracture networks", abstract = "We present a model coupling stress and fluid flow in a discontinuous fractured mass represented as a continuum by coupling the continuum simulator TF_FLAC3D with cell-by-cell discontinuum laws for deformation and flow.

Development of a Coupled Discrete Dual Continuum and ...

A continuum model for coupled stress and fluid flow in discrete fracture networks Quan Gan . Derek Elsworth Received: 23 September 2015/Accepted: 9 December 2015/Published online: 5 January 2016 The Author(s) 2016. This article is published with open access at Springerlink.com Abstract We present a model coupling stress and

Quantitative study in shale gas behaviors using a coupled ...

modification is aiming on computing normal stresses on discrete fracture surface such that fracture related parameters can be fully coupled with geomechanical model. Embedded discrete fracture...

Discrete fracture model for coupled flow and geomechanics ...

on pre-existing fractures is fundamentally a coupled hydro-mechanical process. The presence of a discrete fracture network (DFN) imposes significant challenges on numerical modeling of this coupled process, due to not only the geometric complexity, but also two sets of material properties and constitutive laws for both the

A Comparison of Discrete Fracture Models for Single Phase ...

Chengzeng Yan and Yu-Yong Jiao, A 2D fully coupled hydro-mechanical finite-discrete element model with real pore seepage for simulating the deformation and fracture of porous medium driven by fluid, Computers & Structures, 196, (311), (2018).

Advances in Discrete Fracture Network Modeling Abstract ...

A fully coupled thermo- hydro-mechanical-seismic (THMS) finite element model with 3D discrete fracture network is described that is able to incorporate processes of fracture flow, rock deformation, shear dilation, fracture propagation and induced seismicity.

Hybrid Coupled Discrete-Fracture/Matrix and Multicontinuum ...

The discrete fractures may form a set of planar fractures, connected with a network of conduits. The CFD model-element is coupled to the sub-model of the host geothermal formation, a porous, fractured, and jointed rockmass. Multi-phase, multi-component heat and fluid flow simulators are used for the geologic sub-

The use of discrete fracture networks for modelling ...

In this paper, we develop a coupled discrete fracture and discrete dual continuum model to simulate the fluid flow in fractured systems. Large-scale fractures(LF) are modeled explicitly using a discrete fracture model, called UDFM, and the local-grid refinement is used to accurately handle the transient-flow regime around LFs.

A Geomechanics-Coupled Embedded Discrete Fracture Model ...

A Discrete Fracture Model (DFM) is used to treat the complex network of fractures on a fine grid. The coupled flow and geomechanics equations are solved using a fixed stress-splitting scheme by...

Fully coupled hydromechanical simulation of hydraulic ...

coupled discrete fracture network modeling ... Model To implement an equivalent continuum model accommodat-ing the fractured mass, the key constitutive relations require to be incorporated. These are the formulations for a crack tensor, a permeability tensor, and a model for stress-dependent fracture

Discrete fracture model for coupled flow and geomechanics ...

This paper proposes a three-dimensional coupled hydrothermal model for fractured rock based on the finite-discrete element method to simulate fluid flow and heat transport.

FDENTH3D: A three-dimensional coupled hydrothermal model ...

A "discrete fracture network" (DFN) refers to a computational model that explicitly represents the geometrical properties of each individual fracture (e.g. orientation, size, position, shape and aperture), and the topological relationships between individual frac-

A continuum model for coupled stress and fluid flow in ...

Consequently, the model consist on two coupled flow equations with the same form of equation(1) for each subdomain in terms of the pressures p_f and p , respectively. The internal boundary conditions are flow continuity. 3.3 Domain Decomposition Approach This discrete fracture model is based on a domain decomposition approach and its

A continuum model for coupled stress and fluid flow in ...

/ Fully coupled hydromechanical simulation of hydraulic fracturing in three-dimensional discrete fracture networks. Society of Petroleum Engineers - SPE Hydraulic Fracturing Technology Conference 2015.

Coupled Thermo-Hydro-Mechanical-Seismic Modeling of ...

The first hybrid model couples an embedded-discrete-fracture model (EDFM) with multiple interacting continua (MINC) into EDFM/MINC, which simulates the fracture network characterized by stimulated-reservoir-volume (SRV) concept.

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