



Dipartimento di Scienze Matematiche "G. L. Lagrange"



 $ECCELLENZA 2018 \cdot 2022$

FRAME2020+2

Fractured media: numerical methods for fluid flow and mechanics

Conference - Energy Center - Torino

May 17-20, 2022

Computational methods for the simulation of complex physical processes in fractured media play a fundamental role in many applications including aquifer monitoring and protection, oil & gas enhanced recovery, and geological storage of pollutants. All these applications involve a number of coupled physical processes, occur in large scale complex geometries, are characterized by large uncertainty, and quite often require a reliable risk evaluation and prevention. The conference aims at presenting and discussing a number of issues recently raised about modeling and development of suitable numerical methods regarding:

- Flow in fracture networks
- Influence of roughness inside the fractures
- Fracture propagation
- Self-organization of fracture networks
- Flow in fractured porous media
- Up-scaling and homogenization
- Coupled thermal, hydraulic and/or mechanical processes in fractured media
- Fault reactivation and fracture deformation
- Non-linearities
- Verification benchmarks
- Uncertainty quantification/risk measurements
- Artificial intelligence applied to fractured media, Graph-based methods, model reduction

Invited Speakers

Bernd FLEMISCH (Stuttgart Universitat) Luca FORMAGGIA (Politecnico di Milano) Jeffrey De'Haven HYMAN (Los Alamos National Adriana PALUSZNY (Imperial College) Laboratories)

Romain LE GOC (Université de Rennes 1) Roland MASSON (Université de Nice Sophia Antipolis)

Scientific Committee

Local Organizing Committee

Inga BERRE (University of Bergen) Stefano BERRONE (Politecnico di Torino) Mohammad KARIMI-FARD (Stanford University) Benoit NOETINGER (IFP Energies Nouvelles) Geraldine PICHOT (INRIA Paris)

Sandra PIERACCINI (Politecnico di Torino) Stefano SCIALO' (Politecnico di Torino)