



RESEARCH GROUP OF COMPUTER SIMULATIONS

Main objectives and activities of the laboratory

- research of the properties of new mathematical models for transport and mechanical processes in fractured porous media,
- research and development of numerical methods for modelling the mechanics of elastic bodies, fluid flow, transport processes and coupled processes,
- software development for numerical solution of large and geometrically complicated computational problems.

Professional focus of the laboratory

- mathematical and numerical models of water flow, solute transport of dissolved substances and heat transport with an explicit description of the processes on fractures and their interaction with the surrounding media,
- numerical models of polymer composites with explicit description of mechanical continuity and fibre reinforcement interaction,
- numerical modeling of fluid-structure interaction
- methods and tools for creating complex hydrogeological models from GIS and other available data.

Specific equipment

- Flow123d – flow and transport simulator in fractured porous media, flow123d.github.io,
- OpenFOAM, ANSYS, FEFLOW, COMSOL Multiphysics.

Offered technologies and expertise

- numerical simulations: groundwater flow, substance and heat transport, sorption, decays
- advanced visualization of big data in ParaView www.paraview.org.
- Creation of mathematical and computer models with a combination of existing and inhouse software tools. Model calibration, identification of parameters.



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