

Title: Finite Elements modelling of fluid flow in porous media

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This presentation is a brief introduction of our finite-element reservoir simulator: DOT.CBM 2D. The simulator uses a mathematical model consisting of a set of differential equations that describe the flow of fluids in petroleum reservoirs, with an appropriate set of initial conditions. To develop this model simplifying assumptions need to be made in order to perform simulations in a timely manner. Since no analytical solution could be found, we try to look for a good approximation matching the solution using the finite-element approach. After linearizing the coupled equations, an iterative solver is used to solve the linearized system. The simulator allows configuring both vertical and horizontal wells. It treats reservoir heterogeneity and anisotropy as well as fault formation. Some real-time simulation examples will be given during the presentation.