

On flows of pore pressure activated Bingham fluids

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Abstract: We are concerned with a system of partial differential equations describing internal flows of homogeneous incompressible fluids of Bingham type in which the value of activation (the so-called yield) stress depends on the internal pore pressure governed by an advection-diffusion equation. This model seems to be suitable for the description of important complex processes, such as liquefaction, occurring in granular water-saturated materials. We focus on the PDE analysis of the initial and boundary value problems that are interesting from geophysical point of view. This lecture is based on joint papers with Anna Abbatiello, Miroslav Bulíček, Tomáš Los and Ondřej Souček.