Karlstad Applied Analysis Seminar (2022)

Michal Benes, Czech Technical University in Prague, Czechia.

June 20, Wednesday, 10:30-11.30

Analysis of coupled transport processes in heterogeneous porous media

Abstract

The goal of this talk is to give an overview of some recent results in analysis of coupled transport processes in heterogeneous porous materials. After a brief introduction of the basic system of balance laws and constitutive relations, we focus our attention on the specific application: the problem of hydration and transport processes in cement-based materials such as fresh concrete. Here, the coupled heat and moisture flow model is associated with a system of partial differential equations coupled with an integral condition and physically relevant boundary and initial conditions. We will discuss theoretical aspects of this problem as well as numerical experiments. This is a joint work with Radek Stefan (Czech Technical University in Prague).