



FMSP Lectures

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Singular limit analysis of a reaction-diffusion
system with precipitation
and dissolution in a porous medium

December 10 (Wednesday) 16:00 ~ 17:30 Room 118

Abstract:

This talk is concerned with a mathematical model for the storage of radioactive waste. The model which we study deals with the diffusion of chemical species transported by water, with possible dissolution or precipitation and for a rather general kinetics law. In this talk, we consider a three-component reaction-diffusion system with a fast precipitation and dissolution reaction term. We investigate its singular limit as the reaction rate tends to infinity. The limit problem is described by the combination of a Stefan problem and a linear heat equation. The rate of convergence with respect to the reaction rate is established in a specific case. This is joint work with Hideki Murakawa.