



复旦大学数学科学学院 数学综合报告会

报告题目: On the classical solution to the macroscopic model for in-situ leaching of rare metals

报告人: Professor Anvar Meirmanov (Moscow State University of Civil Engineering, Moscow.)

时间: 2022-06-02 星期四 21:00 - 22:00

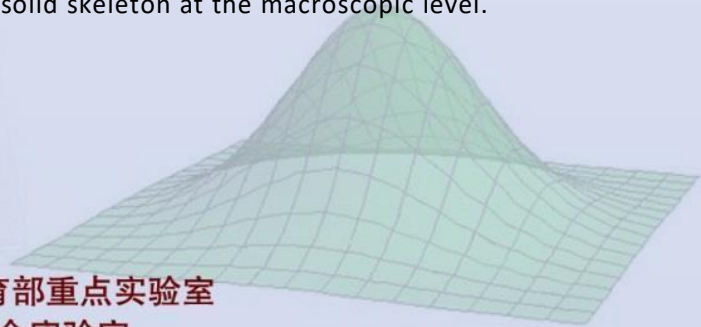
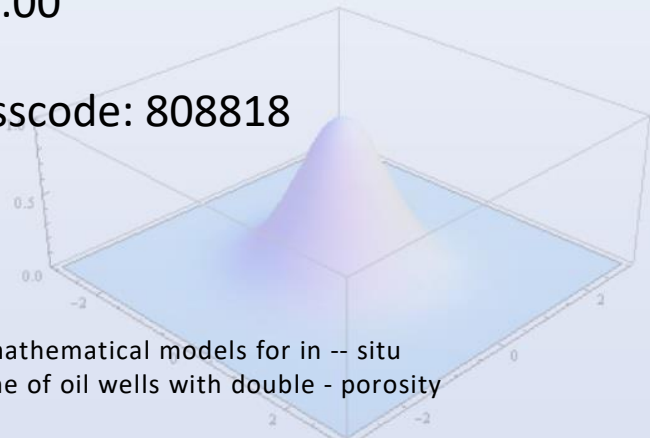
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报告摘要:

We consider initial boundary value problems arising in mathematical models for in-situ leaching of rare metals or for cleaning the bottom-hole zone of oil wells with double-porosity structure and special periodicity.

First, we consider this physical process at the microscopic level (the characteristic pore size is approximately 5-20 microns, governed by Lamé equations for the solid skeleton, the Stokes equations for the liquid component, and the diffusion-convection equations for concentrations of acid and products of a chemical reaction. Due to its dissolution, the solid skeleton has an unknown (free) boundary with the pore and cavity spaces.

Next, assuming the existence of a generalized solution to the corresponding initial-boundary value problem at the microscopic level and using the homogenization method together with the fixed point theorem, we derive the Bio's model describing the physical process of in-situ leaching for slightly viscous liquid in the double-porosity elastic solid skeleton at the macroscopic level.



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