



复旦大学数学科学学院 数学综合报告会

报告题目: **Several recent advances for coupling porous media flow with free flow**

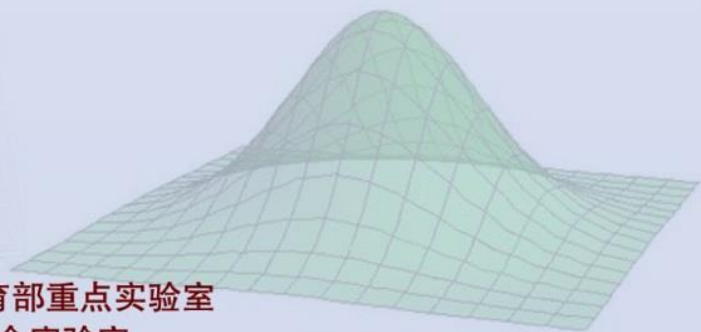
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摘要: The coupled porous media flow and free flow arise from many interesting real world applications, including groundwater system in karst aquifers, interaction between surface and subsurface flows, industrial filtrations, oil reservoir of vuggy porous medium, and so on. Therefore in the past fifteen years, the Stokes-Darcy model has been extensively studied for this type of coupled flows to build a solid foundation in this area. However, there are still many mathematical difficulties in the analysis as well as significant gaps between the existing works and the realistic applications. These require new analysis techniques and model improvement. In this talk, we will briefly present several recent advances our group obtained, such as the analysis of k -step backward differentiation ($1 \leq k \leq 5$) scheme for the Stokes-Darcy model, a dual-porosity-Stokes model, a stochastic Stokes-Darcy model, and a decoupling method for the Cahn-Hilliard-Navier-Stokes-Darcy model.



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