

[an error
occurred
while
processing
this
directive]

本期目录 | 下期目录 | 过刊浏览 | 高级检索

[打印本页]

[关闭]

论文

多孔介质中控制释放耦合问题的有限元方法

佐春梅,程爱杰*

山东大学数学学院, 山东 济南 250100

摘要:

多孔介质中的控制释放-迁移含有3个物理过程:溶质透过内边界(薄膜)释放到介质中;介质中流体的流动;溶质在介质中的扩散。控制释放由边界积分-常微分方程描述,溶质迁移由带第三类边界条件的对流扩散(含机械弥散)方程描述,速度场遵循Darcy定律,构造了一非线性耦合问题的混合元 Galerkin有限元半离散格式及全离散格式,利用先验估计理论进行收敛性分析。

关键词: 混合有限元; 控制释放; 多孔介质; 误差估计

The finite element method for controlled release and spread of solute coupling with fluid velocity in a porous medium

ZUO Chun mei, CHENG Ai jie*

School of Mathematics, Shandong University, Jinan 250100, Shandong, China

Abstract:

The process of controlled release and spread of a solute in porous media contains three physical processes: the process of release of the solute into the porous media through the border of the film, the flow of fluid and the process of the spread of the solute in porous media. The process of controlled release was governed by a boundary integral ordinary differential equation, while the process of spread was characterized by a convection diffusion (with mechanical dispersion) equation with a boundary condition of the third type in the unknown velocity field, which follows Darcy's law. A mixed finite element Galerkin finite element scheme was proposed for solving the coupled nonlinear systems. Convergence was analyzed by a priori estimate method.

Keywords: mixed finite element method; controlled release; porous medium; error estimate

收稿日期 2008-06-25 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者: 程爱杰(1965), 男, 教授, 研究方向为偏微分方程数值解法, 科学与工程计算, 油藏数值模拟. Email: ajcheng@sdu.edu.cn

作者简介:

本刊中的类似文章

扩展功能

本文信息

Supporting info

PDF(275KB)

[HTML全文]

([\\${article.html_WenJianDaXiao}](#)
KB)

参考文献[PDF]

参考文献

服务与反馈

把本文推荐给朋友

加入我的书架

加入引用管理器

引用本文

Email Alert

本文关键词相关文章

混合有限元; 控制释放; 多孔介质; 误差估计

本文作者相关文章