

# 國立交通大學

應用數學系

碩士論文

在雙孔隙隨機介質上單向流的橢圓方程問題

An elliptic Problem for single phase flows in random media

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中華民國九十七年七月

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國立交通大學  
應用數學系  
碩士論文



A Thesis  
Submitted to Department of Applied Mathematics  
College of Science  
National Chiao Tung University  
in partial Fulfillment of the Requirements  
for the Degree of  
Master  
in  
Applied Mathematics

July 2008

Hsinchu, Taiwan, Republic of China

中華民國九十七年七月

# 在雙孔隙隨機介質上單相流的橢圓方程式

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## 摘 要

考慮一個通過兩種不同物質所組成、高度異質性多孔隨機介質上的線性單向流。我們以橢圓方程來描述此現象。藉由 2-scale converge in the mean 的方法獲得均質化問題。



# An elliptic problem for single phase flows in random media

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## ABSTRACT

Consider the linearized equations of slightly compressible single fluid flows through a highly heterogeneous random porous medium, consisting of two types of material. Due to the high heterogeneity of the two materials, the ratio of their permeability coefficients is of order  $\varepsilon^2$ , where  $\varepsilon$  is the characteristic scale of heterogeneities. A homogenized problem is obtained by using the stochastic two scale convergence in the mean and by means of convergence results adapted to a priori estimates and to the random geometry.

# 目 錄

中文摘要	.....	i
英文摘要	.....	ii
誌謝	.....	iii
目錄	.....	iv
1. Introduction	.....	1
...		
2. Ergodic dynamic system and relative theorems	.....	1
3. $\varepsilon$ -problem and main result	.....	4
4. A priori estimate	.....	5
5. Stochastic two scale convergence	.....	8
6. Auxiliary problem and convergence result	.....	11

