



深圳北理莫斯科大学

УНИВЕРСИТЕТ МГУ-ППИ В ШЭНЬЧЖЭНЕ
SHENZHEN MSU-BIT UNIVERSITY

应用数学讲座

Научный Семинар по Прикладной Математике

Research Seminar on Applied Mathematics

应用数学报告（64）

报告人 / Докладчик / Speaker: 张文龙 助理教授（南方科技大学）

题目 / Название / Title: A new framework to quantify the uncertainty in general inverse problems

时间 / Время / Time: 24 Jul. 2022, 16:50-17:15

地点 / Место / Venue: 图书馆1楼报告厅

摘要 / Аннотация / Abstract:

In this work, we investigate the regularized solutions and their finite element solutions to the inverse source problems governed by partial differential equations, and establish the stochastic convergence and optimal finite element convergence rates of these solutions, under point wise measurement data with random noise. The regularization error estimates and the finite element error estimates are derived with explicit dependence on the noise level, regularization parameter, mesh size, and time step size, which can guide practical choices among these key parameters in real applications. The error estimates also suggest an iterative algorithm for determining an optimal regularization parameter. Numerical experiments are presented to demonstrate the effectiveness of the analytical results.