



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 (57)

报告人 / Докладчик / Speaker: 李培军 教授 (Purdue University)

题目 / Название / Title: Inverse random potential scattering for elastic waves

时间 / Время / Time: 24 Jul. 2022, 9:30-10:00

地点 / Место / Venue: Zoom ID: 462 476 1414  
Password: 777777

### 摘要 / Аннотация / Abstract:

This talk is concerned with the inverse elastic scattering problem for a random potential. Interpreted as a distribution, the potential is assumed to be a microlocally isotropic Gaussian random field whose covariance operator is a classical pseudo-differential operator. Given the potential, the direct scattering problem is shown to be well-posed in the sense of distributions by studying the equivalent Lippmann-Schwinger integral equation. For the inverse scattering problem, we demonstrate that the microlocal strength of the random potential can be uniquely determined with probability one by a single realization of the high frequency limit of the averaged scattered wave. The analysis employs the integral operator theory, the Born approximation in the high frequency regime, the microlocal analysis for the Fourier integral operators, and the ergodicity of the wave field.

### 李培军教授简介:

李培军, 美国普渡大学数学系教授, 2005 年于美国密西根州立大学获得博士学位。其研究方向为科学计算、数值和数学分析、及偏微分方程的应用。具体领域包括偏微分方程反问题理论及计算, 声波、弹性波及电磁波在复杂和随机介质中的散射和反散射问题。