



复旦大学数学科学学院 数学综合报告会

报告题目: Some Theoretical and Computational Aspects of the Inverse Boundary Value Problems for the Wave Equation

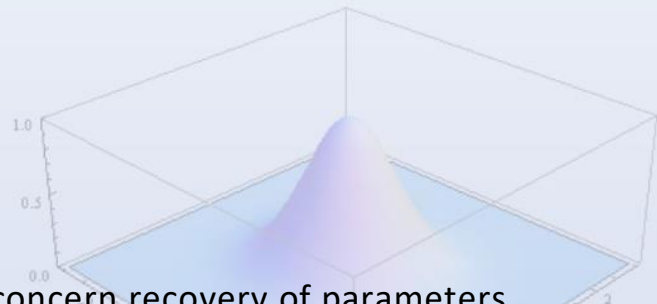
报告人: Yang Yang (Michigan State University)

时间: 2023-07-27 星期四 15:30-16:30

地点: 光华楼东主楼1601室

报告摘要:

Inverse boundary value problems (IBVPs) concern recovery of parameters in partial differential equations from boundary data. This talk will focus on the IBVPs for the wave equation. On the theoretical side, we consider the IBVP on a cylinder-like Lorentzian manifold for the Lorentzian wave equation with lower order terms. We show that local knowledge of the Dirichlet-to-Neumann map stably determines the jets of the wave parameters up to gauge transformations, and global knowledge of the map stably determines the lens relation as well as the light ray transforms of the lower order terms. On the computational side, we present a non-iterative algorithm for the acoustic IBVP to reconstruct the sound speed. The algorithm is based on the boundary control method and validated with both full and partial boundary data. The talk is based on the joint work with Plamen Stefanov and Tianyu Yang.



非线性数学模型与方法教育部重点实验室
中法应用数学国际联合实验室
上海市现代应用数学重点实验室
复旦大学数学研究所