



北京理工大学

数学与统计学院学术报告

Stability of a KdV equation close to critical lengths

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时间: 2026.5.26 14:00--15:00

地点: 文萃E 7楼报告厅

摘要:

In this talk, we study the quantitative exponential stability of the KdV equation on a finite interval, focusing on the cases where the length is close to the critical set. Through a constructive PDE control framework, we obtain sharp decay estimates for such cases. Specifically, I will introduce a transition-stabilization approach that combines the Lebeau--Robbiano strategy with the moment method to establish quantitative null controllability for the KdV equation. Furthermore, based on a classification of these critical lengths, we show that the KdV equation exhibits different asymptotic behaviors near different types of critical lengths. This is a joint work with Shengquan Xiang.

报告人简介: 牛景瑞, 哈尔滨工业大学数学研究院副教授, 研究方向为偏微分方程的控制理论、色散方程 (如Schrödinger方程、KdV方程) 的可控性与稳定性, 以及微局部分析/半经典分析方法的应用, 博士毕业于巴黎萨克雷大学, 师从著名数学家 N. Burq教授, 学术成果发表于 J. Math. Pures Appl.、Indiana University Math J., SIAM J. Control Optim.、Journal of the London Mathematical Society, J. Differential Equations 等国际权威期刊。