




复旦大学数学科学学院

数学综合报告会

午间学术报告会（二百零八）

报告题目：Observability and Stabilization of Degenerate Waves: From Optical Geometry to Coupled Wave Families

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报告时间：2026-11-12 星期四 12:00-13:00

报告地点：光华东主楼 2201

摘要：

We study boundary observability and control for a degenerate Timoshenko beam whose shear and bending stiffnesses may vanish independently at one endpoint. A classical multiplier approach leads to a restrictive smallness condition involving the degeneracy and the shear–bending coupling. We show that this restriction is not intrinsic for Dirichlet and Neumann observation. By exploiting an exact space–time cancellation of the coupling term, together with sidewise energy estimates and a compactness–uniqueness argument, we establish boundary observability in the full subcritical regime where both optical lengths are finite. The corresponding exact boundary controllability follows from the Hilbert Uniqueness Method. We also discuss the role of optical geometry and the transition toward the critical regime of infinite optical distance.

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