



复旦大学数学科学学院 数学综合报告会

报告题目: Long-time behavior of partially damped systems
modeling degenerate plates with piers

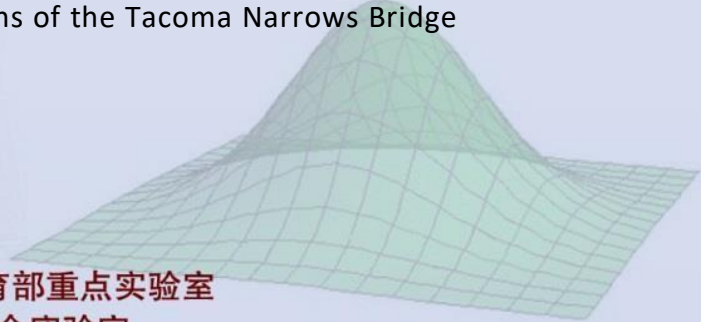
报告人: Professor Filippo Gazzola (The Polytechnic University
of Milan)

时间: 2022-04-28 星期四 21:00 - 22:00

地点: ZOOM Id: 836 7313 8944 Passcode: 808818

报告摘要:

We consider a partially damped nonlinear beam-wave system of evolution PDE's modeling the dynamics of a degenerate plate. The plate can move both vertically and torsionally and, consequently, the solution has two components. We show that the component from the damped beam equation always vanishes asymptotically while the component from the (undamped) wave equation does not. In the case of small energies, we show that the first component vanishes at exponential rate. Our results highlight that partial damping is not enough to steer the whole solution to rest and that the partially damped system can be less stable than the undamped system. Hence, the model and the behavior of the solution enter in the framework of the so-called "indirect damping" and "destabilization paradox". These phenomena are valorized by a physical interpretation leading to possible new explanations of the Tacoma Narrows Bridge collapse.



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