



复旦大学数学科学学院 数学综合报告会

报告题目: **Finite-time stabilization of systems of conservation laws on tree-shap**

报告人: Prof. Lionel Rosier

(Ecole des Mines, Paris)

报告时间: 2017-06-21 星期三 9:00-10:00

报告地点: 光华东主楼 1801

摘要: We investigate the finite-time boundary stabilization of a one-dimensional first-order quasilinear system of diagonal form on $[0,1]$. The dynamics of the boundary controls are governed by a finite-time stable ODE. We derive a (local) finite-time stability for the full system. The above feedback strategy is applied to the regulation of water flows in a network of canals. When zero-order terms are incorporated in the system, we show that the system remains exponentially stable with a decay rate related to the magnitude of the perturbative terms. Finally, we consider the finite-time stabilization of the wave equation on a tree. Transparent boundary conditions are applied at all the external nodes, and at the internal nodes, in addition to the usual continuity conditions, the Kirchhoff law is modified by incorporating a damping term. We show that a finite-time stability still occurs for a certain choice of the damping coefficients at the internal nodes. This is a joint work with Vincent Perrollaz and Fatiha Alabau-Boussouira.

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