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Title:

Approximate controllability and steering problem for a class of hyperbolic systems with smooth controls

Abstract:

This talk focuses on the approximate steering problem for a class of hyperbolic distributed parameter systems with finite-dimensional controls. An approach for solving this problem is proposed by using exact solutions to the steering problem for reduced systems and the spillover condition. This approach also allows to estimate the reachable sets and to study the approximate controllability property. To satisfy the spillover condition, we exploit L2-optimal controls for a family of finite-dimensional subsystems. These controls are smooth and can be constructed explicitly for a class of oscillating systems with one-dimensional input. We illustrate this control design scheme by mechanical examples with elastic beams and plates.