

Numerical approximations to null controllers for nonstandard parabolic equations

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Abstract

Our talk will concern the numerical analysis of the null controllability problem for structurally damped “abstract wave equations” and two-dimensional thermoelastic systems which are “rotational-inertia free”. It is now known that these two PDE systems can be modelled abstractly by generators of *analytic* contraction semigroups, these semigroups evolving in the basic Hilbert space of wellposedness. (Because of this underlying infinite speed of propagation and the corresponding smoothing effects of the semigroup dynamics, the null controllability problem is an appropriate one for study.) In particular, for the case of bounded control, we have developed numerical approximation schemes in which the null controllers are *explicitly* computed, in part through the appropriate use of a general algorithm of Roberto Triggiani.

Key Words: Null control, thermoelasticity, structurally damped elastic equations