



Workshop on Nonlinear Analysis and Control Theory in Honor of Professor Enrique Zuazua for his 60th birthday

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On hierarchical control of parabolic equation

Luz de Teresa*

Instituto de Matemáticas
Universidad Nacional Autónoma de México
México

Abstract

On this conference we present control problems when applying multiple strategies to control a parabolic equation.

In classical control theory, we usually find a state equation or system and one control with the mission of achieving a predetermined goal. Frequently (but not always), the goal is to minimize a cost functional in a prescribed family of admissible controls. In the last 20 years there has been an interesting effort on attaining a "controllability" objective, that is, we want to drive the solution of a system at a time T to a particular (or close to a particular) objective.

A more interesting situation arises when several (in general, conflictive or contradictory) objectives are considered. This may happen, for example, if the cost function is the sum of several terms and it is not clear how to average. It can also be expectable to have more than one control acting on the equation. In these cases, we are led to consider multi-objective control problems.

There exist several equilibrium concepts for multi-objective problems, with origin in game theory, mainly motivated by economics. Each of them determines a strategy. We will concentrate on presenting different issues of what is called a Stackelberg strategy in the particular case of a parabolic equation.

*e-mail: deteresal@gmail.com