

SEMINARIO
MECÁNICA MATEMÁTICA
EXPOSITOR

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TITULO
Control and numerical simulation in large time horizons

ABSTRACT:

In this talk we present some aspects of our work in Partial Differential Equations, their control and numerical approximation focusing on topics relevant for the 2013 program of Mathematics of Planet Earth.

One of the main distinguishing aspects of climate science is that evolving phenomena have to be understood in a long time horizon.

In this lecture we shall analyze this issue from viewpoints. First of all, following a recent joint work with A. Porretta, we will address the problem of large time versus steady state control. The problem we consider is as follows. Assume that the large time asymptotic behavior of a system is given by a steady state one. Can one say that the control in large time horizons converge, as the time horizon tends to infinity, to steady state controls in some sense?

We also address the problem of large time numerics for hyperbolic conservation laws. As we shall see (joint work with L. Ignat and A. Pozo), some numerical schemes that are well known to converge in finite time intervals, fail to capture the correct large time dynamics. This is a warning when considering climate issues.

Climate models are also submitted to uncertainty. We shall conclude this talk by introducing a new notion of averaged controllability that leads to a huge class of interesting and challenging mathematical problems.

This lecture is oriented to a general audience. Unnecessary technicalities will be avoided.

Lunes 22 de Julio del 2013, a las 16 : 00 hrs, Sala Multimedia Sexto Piso.