

Insensitizing controls for the heat equation with respect to boundary variations.

15 th December

Abstract: The goal of this talk is to present the questions of insensitization for a quadratic functional involving the solution of the linear heat equation with respect to variations. These variations can be in the initial datum as it is usually done, or with respect to boundary variations as it has been investigated recently in a work by Lissy, Privat and Simpore (ESAIM 2019). In this latter case, this question amounts to find controls such that a functional is not sensitive with respect to small variations of the boundary. We will further analyze this question, and distinguish between the following questions: epsilon-approximate insensitization, exact insensitization, epsilon-approximate insensitization and exact insensitization on a finite-dimensional space. We will present several results on these questions based on the approximate controllability of a suitable coupled system of parabolic equations, and a new strategy to achieve exact insensitization on finite dimensional spaces of boundary variations. This is a joint work with Pierre Lissy and Yannick Privat.