Optimal Control of Sweeping Processes: Theoretical Framework and Numerical Approximation

Francisco José Silva Alvarez

In this talk, based on joint work with J. Gianatti and E. Vilches, we first provide a theoretical framework for finite-horizon optimal control problems in which the state is governed by a controlled sweeping process, and we show that the value function is characterized by two inequalities in the viscosity sense. We then introduce a semi-Lagrangian scheme to approximate the value function and establish its convergence. Finally, we present numerical experiments for two-dimensional problems and discuss some promising extensions.