Necessary Conditions in Dynamic Optimization

Richard Vinter
Imperial College of London
r.vinter@imperial.ac.uk

Abstract

Necessary conditions of optimality are a centrepiece of optimal control theory. Even in situations in which they do not lead directly to the solution of a particular problem, they have an important role both in establishing regularity properties of minimizers and inspiring numerical solution techniques. In this talk, we cover the evolution of this field following on from the discovery of the Maximum Principle 50 years ago, recent developments and current open questions. Special emphasis is given to an approaches according to which dynamic optimization problems are formulated as generalized problems in the calculus of variations with one independent variable and then far reaching extensions of classical necessary conditions are derived by means of non-smooth analysis.