Investigation of optimal control problems governed by kinetic models

Since the pioneering work of Ludwig E. Boltzmann, the configuration of multi-particle systems is conveniently represented by a material (alternatively, probabilistic) density and the evolution of this density is modelled by kinetic equations.

These models are widely applied in diverse problems ranging from pedestrian motion to rarefied gases, and most applications require the design of control mechanisms to steer the systems in order to perform given tasks.

In this talk, theoretical and numerical results are presented concerning optimal control problems with kinetic models having different structures, including space-inhomogeneous models with collision terms and different control mechanisms.