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Mean Field Control: Convergence and Approximation

by

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Time: 2:30pm – 3:30pm
Venue: 1601, Li Dak Sum Yip Yio Chin Academic Building

ABSTRACT

Mean field control theory addresses control problems set over (controlled) Fokker-Planck equations. Intuitively, a mean field control problem describes the asymptotic version of a control problem set over a large population of weakly interacting cooperative players. This theory complements the theory of mean field games introduced twenty years ago by Larry and Lions and by Huang, Caines and Malhamé, which addresses large populations of competitive players. In this talk, I will address two questions: the first one regards the rate of convergence of the finite-population value functions to the mean-field value function (as the size of the population tends to infinity), especially in the case when the mean-field value function may not be smooth; the second one concerns possible parametric approximations of Fourier-Galerkin type of the mean-field control value function in a smooth regime.

The talk will be based on joint works with Joe Jackson (Chicago) and Samuel Daudin (Nice) and with Mattia Martini (Nice).

~ALL ARE WELCOME~