Title: A Stationary Mean-Field Model of Capacity Expansion in a Two-Regime Economy
Giorgio Ferrari, 21.10.2022

Abstract: In this talk, I present recent results on stationary mean-field games with singular controls for a Markov-modulated Itô-diffusion, in which the representative player interacts with a long-time conditional weighted average of the population through a discounted performance criterion. This class of games finds natural applications in the context of irreversible production expansion in dynamic oligopolies, where the dynamics of the production capacity depends on the economy's business cycles modeled through a continuous-time Markov chain. We prove existence and uniqueness of the mean-field stationary equilibrium and characterize it through a system of nonlinear equations. Along the way, explicit results for the joint stationary distribution of the controlled production capacity and the Markov chain at equilibrium are also derived. A detailed numerical analysis allows to understand the dependency of the mean-field equilibrium with respect to the model's parameters. This is based on a joint ongoing work with René Aid and Matteo Basei.