Abstract:
Classically, general Markov processes were studied through their relationship to operator semigroups. The analytic challenges of operator semigroup theory helped motivate the development of alternative approaches including stochastic equations as introduced by Ito and martingale problems as introduced by Stroock and Varadhan. These approaches have dominated work on Markov processes in the mathematics literature while the Kolmogorov forward equation that characterizes the one dimensional distributions of the process receives much more attention in the physics literature (cf. Fokker-Planck equation, master equation). The talk will include a brief overview of all these approaches paying particular attention to the equivalence of the different approaches in characterizing Markov processes.