

**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Colloquium

Mean field optimal stopping

By

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Abstract

We study the optimal stopping problem of McKean-Vlasov diffusions when the criterion is a function of the law of the stopped process. A remarkable new feature in this setting is that the stopping time also impacts the dynamics of the stopped process through the dependence of the coefficients on the law. The mean field stopping problem is introduced in weak formulation in terms of the joint marginal law of the stopped underlying process and the survival process. Using the dynamic programming approach, we provide a characterization of the value function as the unique viscosity solution of the corresponding dynamic programming equation on the Wasserstein space. Under additional smoothness condition, we provide a verification result which characterizes the nature of optimal stopping policies, highlighting the crucial need to randomized stopping. Finally, we establish the convergence of the finite population multiple optimal stopping problem to the corresponding mean field optimal stopping limit. These results of propagation of chaos are proved by adapting the Barles-Souganidis monotonic scheme method to the present context.



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Date: 19 January 2023 (Thursday)

Time: 15:00-16:00 (Hong Kong Standard Time GMT +8)

Venue: TU107, Yip Kit Chuen Building (Hybrid mode)

Meeting ID: 974 0122 6152 (Passcode: 0119)

Speaker: Prof. Nizar Touzi, Ecole Polytechnique

Host: Prof. Min Dai, The Hong Kong Polytechnic University

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<https://polyu.zoom.us/j/97401226152?pwd=NWN0a0VyRTQ2QjcxNlVqNUhZeFFDQT09>

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