

October 28, 2024
2:00pm-3:00pm
KAP 414

Prof. Mehdi Talbi
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Control of Volterra-type dynamics and applications to contract theory

Abstract: We focus on the optimal control of a class of stochastic Volterra integral equations. Here the coefficients are regular and not assumed to be of convolution type. We show that, under mild regularity assumptions, these equations can be lifted in a Sobolev space, whose Hilbertian structure allows us to attack the problem through a dynamic programming approach. We are then able to use the theory of viscosity solutions on Hilbert spaces to characterize the value function of the control problem as the unique solution of a parabolic equation on Sobolev space. As a by-product of our analysis, we obtain a new Markovian approximation for Volterra-type dynamics.

In our framework, we are able to study a special class of Principal-Agent problems, where the Agent is subject to a certain form of time-inconsistency. In particular, we are able to formulate the Principal's problem as an optimal control problem with stochastic target constraints on a Sobolev space and to formally derive the corresponding dynamic programming equation.

This is a joint work with Dylan Possamaï (ETH Zürich).

Zoom Link: USC Math Finance Colloquium

Join Zoom Meeting

<https://usc.zoom.us/j/94973619069?pwd=VnU5bVIMc1pzVTIEYUVaZUYyNSt6UT09>

Meeting ID: 949 7361 9069

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