"A weak dynamic principle for combined optimal stopping/stochastic control with nonlinear expectations"

Abstract:

We study a combined optimal control/stopping problem under a nonlinear expectation $\mathcal{E}^f$ induced by a BSDE with jumps, in a Markovian framework. This study is the first one in this context which considers the case of a noncontinuous reward function. We establish a weak dynamic programming principle (DPP), which extends that obtained by Bouchard-Touzi in the case of linear expectations to the case of $\mathcal{E}^f$-expectation and Borelian terminal reward function.