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SIAM Student Chapter Seminar Series

A Penalty Scheme and Policy Iteration for Nonlocal HJB Variational Inequalities with Monotone Drivers

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Abstract: We propose a class of numerical schemes for nonlocal HJB variational inequalities (HJBVIs) with monotone drivers. The solution and free boundary of the HJBVI are constructed from a sequence of penalized equations, for which a continuous dependence result is derived and the penalization error is estimated. The penalized equation is then discretized by a class of semi-implicit monotone approximations. We present a novel analysis technique for the well-posedness of the discrete equation, and demonstrate the convergence of the scheme, which subsequently gives a constructive proof for the existence of a solution to the penalized equation and variational inequality. We further propose an efficient iterative algorithm with local superlinear convergence for solving the discrete equation. Numerical experiments are presented for an optimal investment problem under ambiguity and a recursive consumption-portfolio allocation problem.

Date: June 26, 2018 (Tuesday)
Venue: Room 219, Lady Shaw Building,
The Chinese University of Hong Kong, Shatin
Time: 3:00pm – 4:30pm

All are Welcome