

Financial Mathematics Seminar
1206 Nelson Hall
1:30-2:30pm, Friday, March 30, 2007

Speaker: Professor Xin Guo
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Title:
Connecting singular and switching controls, with applications in finance

Abstract:

Analysis of (ir)reversible problems from mathematical economics has evolved considerably from the initial heuristics to the more sophisticated and standard stochastic control approach. In this talk, we discuss a new theoretical connection between singular controls of finite variation and a class of switching controls. This correspondence provides a novel methodology for solving explicitly high-dimensional singular control problems. In particular, both sufficient and necessary conditions for the well-known smooth fit principle along with the regularity of the value functions are given. And when the payoff functions satisfy the usual Inada conditions, the boundaries between action and no-action regions are smooth and strictly monotonic as postulated and exploited in the existing literature. Consequently, our result links singular controls and Dynkin games through sequential optimal stopping problems.

This talk is based on a joint work with P. Tomecek of Cornell.