BOSTON UNIVERSITY

Boston University Statistics and Probability Seminar Series

Regularity in the optimal stopping problem for Levy processes with non-degenerate diffusions

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Mathematics and Computer Science (MCS) Building, Room 149
111 Cummington Street, Boston
Tea and Cookies at 3:30pm in MCS 153

Abstract: We will discuss two new regularity properties of the optimal stopping problem for Levy processes with a non-degenerate diffusion component. First, under some conditions on the Levy measure, we will show that the value function of the optimal stopping problem is a classical solution of the variational inequality. This result has been known for Levy processes of finite activity. We extend it to the general Levy processes of infinite activity. Second, we will discuss a specific example of the optimal stopping problem: the American option pricing problem. We will show that the optimal exercise boundary / free boundary of the American put in jump diffusion models is continuously differentiable (except at the maturity). Moreover, the boundary is shown to be infinitely differentiable under a regularity assumption on the jump distribution. These are joint works with Erhan Bayraktar.

For directions and maps, please see *http://math.bu.edu/research/statistics/statseminar.html.*