A LINEAR AND NONLINEAR PROGRAMMING ANALYSIS OF STOCHASTIC SWITCHING CONTROL PROBLEMS

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The talk will review recent work on switching control problems, in particular, infinite-cycle investment/disinvestment decision problems. Using the novel approach of reformulating such problems first in terms of an infinite-dimensional linear program and then relaxing the constraints on the variables, an upper bound is established on the optimal value. This bound can be stated as the maximal value of a nonlinear optimization problem. The upper bound is easily seen to be achieved by specific control policies and therefore establishes the optimality of these policies among a large class of admissible controls. This solution approach requires little regularity of the cost and payoff functions and naturally allows one to employ different numerical techniques.