1093-91-377   **Ruihua Liu*** (`rliu01@udayton.edu`), Department of Mathematics, University of Dayton, 300 College Park, Dayton, OH 45469. *Optimal Stopping of Switching Diffusions with State Dependent Switching Rates.* Preliminary report.

This presentation is concerned with a continuous-time and infinite-horizon optimal stopping problem in switching diffusion models. In contrast to the assumption commonly made in the literature that the regime-switching is modeled by an independent Markov chain, we consider in this paper the case of state-dependent regime-switching. The Hamilton-Jacobi-Bellman (HJB) equation associated with the optimal stopping problem is given by a system of coupled variational inequalities. By means of the dynamic programming (DP) principle, we prove that the value function is the unique viscosity solution of the HJB system. As an interesting application in mathematical finance, we examine the problem of pricing perpetual American put options with state-dependent regime-switching. A numerical procedure is developed based on the dynamic programming approach and an efficient discrete tree approximation of the continuous stock price process modeled by a regime-switching geometric Brownian motion. Numerical results are reported. (Received August 20, 2013)