1056-60-1123 **Son Luu Nguyen*** (luu@math.wayne.edu), 1138 Faculty/Administration Building, 656 W Kirby, Detroit, MI 48202, and **George Gang Yin** (gyin@math.wayne.edu), 1217 Faculty/Administration Building, 656 W Kirby, Detroit, MI 48202. *Strong Approximation for Markov Modulated Random Sequences with Two-Time Scales.*

This talk is concerned with asymptotic properties of Markov modulated random processes having two-time scales. The model contains a number of mixing sequences modulated by a switching processes that is a discrete-time Markov chain. The motivation of our study stems from applications in manufacturing and production planning, communication networks, and economic systems. One of the main features is the inclusion of regime-switching processes to model random environment and other random factors. Our main effort focuses on obtaining a strong approximation result. An example for a stochastic optimization problem is also provided. (Received September 21, 2009)