1064-60-33 **Di Liu*** (richardl@math.msu.edu), D217 Wells Hall, East Lansing, MI 48824. *Numerical methods for stochastic bio-chemical reacting networks with multiple time scales.*

Multiscale and stochastic approaches play a crucial role in faithfully capturing the dynamical features and making insightful predictions of cellular reacting systems involving gene expression. Despite their accuracy, the standard stochastic simulation algorithms are necessarily inefficient for most of the realistic problems with a multiscale nature characterized by multiple time scales induced by widely disparate reactions rates. In this talk, I will discuss some recent progress on using asymptotic techniques for probability theory to simplify the complex networks and help to design efficient numerical schemes. (Received August 16, 2010)