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Hye Won Kang* (hkang@math.umn.edu), 127 Vincent Hall, 206 Church St SE, Minneapolis, MN 55455, and **Likun Zheng** and **Hans Othmer**. *The maximal compartment size in stochastic modeling of chemical reaction-diffusion networks.*

In this talk, I will discuss how to discretize space for the stochastic spatially-discrete model for chemical reaction-diffusion networks. A system with reaction and diffusion is modeled using a continuous time Markov jump process. Diffusion is described as a jump to the neighboring compartments with proper spatial discretization. Considering the measure defined by steady-state first and second moments of each species in each compartment, the maximal compartment size for spatial discretization will be suggested. Then, I will show conditions for the exponential convergence of concentration to the uniform solution in the corresponding deterministic spatially-continuous model for chemical reaction-diffusion networks. Conditions obtained from the deterministic model estimate the maximal compartment size for space discretization from the stochastic model well. This is a joint work with Hans Othmer and Likun Zheng. (Received February 15, 2010)