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Nicolas Lanchier* (lanchier@asu.edu), School of Mathematical and Statistical Science, Arizona State University, Tempe, AZ 85287. *Stochastic spatial model of producer-consumer systems.*

The objective of this talk is to give a rigorous analysis of a stochastic spatial model of producer-consumer systems in order to understand the role of space in ecological communities in which individuals compete for resources. Each point of the square lattice is occupied by an individual which is characterized by one of two possible types. Each individual being thought of as a producer and consumer of resources, the new type at each update is chosen at random from a certain interaction neighborhood according to probabilities proportional to the ability of the neighbors to consume the resource produced by the individual to be updated. Our results indicate that the nonspatial deterministic mean-field approximation of this stochastic process fails to describe the behavior of the system in the presence of local interactions. In particular, in the parameter region where the nonspatial model displays bistability, there is a dominant type that wins regardless of its initial density in the spatial model. The inclusion of space also translates into a significant reduction of the parameter region where both types coexist. (Received September 03, 2012)