

Effects of quenched randomness on predator-prey interactions in a stochastic Lotka-Volterra lattice model

U. Dobramysl¹ and U. C. Täuber²

¹*Christian Doppler Laboratory for Surface Optics, Institute for Semiconductor and Solid State Physics, JKU Linz, Austria*

²*Department of Physics, Virginia Tech, Blacksburg, VA, USA*

We study a stochastic two species Lotka-Volterra lattice model including spatially varying rates (quenched randomness) using Monte Carlo simulations. The influence on the equilibrium population densities, the transient oscillations, traveling wave and invasion front speed velocity are investigated. The radial distribution function is derived as a function of randomness. It is demonstrated that randomness in the predation rate yields an increase in the equilibrium population densities of both prey and predators.