Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Neutral species domination on different lattices for the symmetric stochastic cyclic competition of four species[1] BEN INTOY, Virginia Tech, SVEN DOROSZ, University of Luxembourg, MICHEL PLEIMLING, Virginia Tech
— Although the mean-field solution for four species in cyclic competition is generally in good agreement with stochastic results, it fails to describe the extinction and absorbing states that finite size systems inevitably fall into. We study the effects of dimension, lattice type, and swapping rate between particles on the time it takes for the system to go into a static absorbing state, which consists of a neutral species pair. Lattice types discussed are the well mixed environment, the one-dimensional chain, the Sierpinski triangle, and the two-dimensional square lattice. Data presented were acquired with simulations that have around the order of a thousand lattice sites or less, to capture finite size effects. The formation of domains composed of neutral species yields long lived states which promote coexistence.

[1]This work is supported by the US National Science Foundation through grants DMR-0904999 and DMR-1205309.

Michel Pleimling
Virginia Tech

Date submitted: 29 Oct 2012 Electronic form version 1.4