

Abstract Submitted
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Spatial Disorder in Cyclic Three-Species Predator-Prey Models¹

QIAN HE, Department of Physics, Virginia Tech, MAURO MOBILIA, Department of Applied Mathematics, University of Leeds, U.K., UWE C. TÄUBER, Department of Physics, Virginia Tech — By numerically studying the oscillatory dynamics of several variants of cyclic three-species predator-prey models with conserved total particle density, we investigate the effects of spatial variability of the reaction rates and site occupancy restrictions on the system's co-evolutionary dynamics. It is shown that both quenched disorder in the reaction rates and lattice site occupancy restrictions have only minor effects on the dynamics of cyclic competing systems. This result is starkly different from the finding in two-species predator-prey model where spatial disorder can greatly enhance species fitness. We also numerically compute the dependence of the mean extinction time, for small systems, on system size.

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