Classification of Singularity for Models with Gaussian Competition and Carrying Capacity functions

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Abstract

In this talk, we classify the singularity of a Lotka-Volterra competitive model. We classify the singularity of the fitness function according to topological codimensions and unfolding normal forms. We also investigate the effect of the presence of unfolding and bifurcation parameters on the evolution of the system near its singular points. We focus on evolutionary stable strategy ESS types and convergence stable strategy $CvSS$ types. Mutual invasibility plots were used to show the regions where the resident traits are invadable, the regions were they are uninvadable, and regions of coexistence.