

ON THE DYNAMICS OF DISCRETE-TIME COMPETITIVE SYSTEMS VIA CARRYING SIMPLICES

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We provided a readily checked criterion to guarantee the existence of carrying simplex for discrete-time Kolmogorov competitive systems. Based on it, we proved that arbitrary dimensional Leslie/Gower model and generalized Atkinson/Allen model admit a unique carrying simplex. We also derived a formula on the sum of indices of fixed points on the carrying simplex for 3D discrete-time competitive systems. Further we established a classification theory for 3D Leslie/Gower model and also the generalized Atkinson/Allen model. Based on this classification, one can obtain the trivial dynamics in some classes directly, and investigate bifurcations, heteroclinic cycles, and invariant closed curves within each other class [1, 2, 3].

References

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