

Characterization of Multispecies Living Ecosystems With Cellular Automata

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A multispecies artificial ecosystem is formulated using cellular automata with species interactions and food chain hierarchy. The constructed finite state automaton can simulate the complexity and self-organized characteristics of the evolving multispecies living ecosystems. Numerical experiments show that a small perturbation or extinction event may affect many other species in the ecosystem in an avalanche manner. Both the avalanches and the extinction arising from these changes follow a power law, reflecting that the multispecies living ecosystems have the characteristics of self-organized criticality.

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