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Mathematical theory of selection and the Principle of minimum discrimination information.

Dynamics of many complex systems can be described by replicator equations (RE). Here we present an effective method for solving a wide class of RE based on reduction theorems for models of inhomogeneous communities. The solutions of the RE minimize the discrimination information of the initial and current distributions at each point of the system trajectory, not only at the equilibrium, under time-dependent constraints. Applications to inhomogeneous versions of some conceptual models of mathematical biology (logistic and Ricker models of populations and Volterra' models of communities) are given. (Received September 19, 2010)