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Equilibrium Selection for Markov Processes via Random Trajectory Entropy with applications to Finite Population Biology.

For the Moran process with mutation in multitype populations we show that random trajectory entropy is a measure of instability of stationary extrema, combining information from the stationary distribution and the inherent randomness (entropy rate) of the process. This allows equilibria selection between equilibria of the same process as well as the comparison of processes themselves. Accordingly we find that for a population with many equilibria that the most stable is determined by the population size, mutation rate, and intensity of selection, with each equilibria favored under various parameter combinations. (Received September 08, 2014)