

Abstract Submitted
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Maximum Path-Entropy Analysis of Aggregated Markov Models

ROY CAMPBELL, Walla Walla University — The principle of maximum path entropy, which is also known as the principle of maximum caliber, is a generalization of the principle of maximum entropy to systems not necessarily close to equilibrium. The principle of maximum path entropy has recently been used to derive dynamical laws of transport, analyze single particle two-state dynamics, study few-state models of non-equilibrium processes, analyze the dynamics and fluctuations in biochemical reactions and cycles, and analyze ion-channel gating. It has been shown that when a system such as an ion channel is modeled using an aggregated Markov model, methods that use steady state gating statistics can typically find several models with different topologies that fit the data equally well. We explore the use of the principle of maximum path entropy to distinguish between different aggregated Markov models that all fit the steady state gating data but have different topologies.

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