

[P6] Three Detailed Balance Fluctuation Theorems in Another Way

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It is well known that total entropy change is decomposed into non-adiabatic and adiabatic entropy changes. In this research, those entropy changes are derived in a different way. Introducing observing period and temporarily time homogeneous Markov process, transition probability is separated into two parts, equilibrium and nonequilibrium terms. Equilibrium term is satisfying detailed balance condition, and nonequilibrium term is the rest of transition probability. Although there might be many ways to make transition satisfying detailed balance condition, a unique equilibrium transition matrix can be defined by using steady state probability distribution or eigen vector of transition matrix for given control parameter. Total path entropy change is separated by using equilibrium and nonequilibrium process, too. Entropy change by equilibrium process is equivalent to non-adiabatic entropy change, and the rest is adiabatic entropy change.