

A generalized detailed balance relation.

David P. Ruelle *

ruelle@ihes.fr

The transition probabilities of reactions $J \rightarrow K$ and $K \rightarrow J$ in a thermal bath are related because of the time reversal symmetry of fundamental physical laws. The relation is known as detailed balance relation. We study the problems that arise in obtaining a rigorous proof of detailed balance, using deterministic rather than Markovian dynamics. J. England's biological applications of detailed balance are briefly considered.