Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

A possible classification of nonequilibrium steady states.[1] ROYCE K.P. ZIA, BEATE SCHMITTMANN, Virginia Tech — We propose a general classification of nonequilibrium steady states in terms of their stationary probability distribution and the associated probability currents. The stationary probabilities can be represented graph-theoretically as directed Cayley trees; closing a single loop in such a graph leads to a representation of probability currents. This classification allows us to identify all choices of transition rates, based on a master equation, which generate the same nonequilibrium steady state. We explore the implications of this freedom, e.g., for entropy production, and provide a number of examples.

[1]Supported by NSF DMR-0414122

Royce K.P. Zia
Virginia Tech

Date submitted: 19 Nov 2006 Electronic form version 1.4