

Duality, intertwining, and non-equilibrium steady states

- 講師** : Professor Cristian Giardinà
University of Modena and Reggio Emilia, Italy
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概要

For a class of stochastic models of mass/energy transport, we prove several intertwining relations, which in turn follow from Markov duality. As a consequence of these relations, we deduce a special property of the dynamics: certain mixture measures are closed for the dynamics, and their evolution can be followed over time. As a main application, we consider the non-equilibrium steady state that arises when these models are put in contact with multiple external reservoirs and prove that, remarkably, it is a mixture on any graph. For a distinguished example in the class (namely, the interacting particle system associated with the integrable XXX non-compact spin chain) the mixture measure can be explicitly characterized in terms of the ordered Dirichlet distribution.

連絡教員 笹本 智弘 (内線 2736)