

Multi-state extension of the asymmetric simple exclusion processes

Chihiro Matsui

The University of Tokyo
7-3-1, Hongo, Bunkyo, Tokyo
Japan
matsui@mist.i.u-tokyo.ac.jp

There are few far-from-equilibrium systems which are exactly solvable. One of those few examples is the asymmetric simple exclusion process. We consider the multi-state extension of the asymmetric simple exclusion process based on the fact that the Markov matrix of this process satisfies the algebraic relations of the Temperley–Lieb algebra. Besides the steady states, we derive the exact expressions of particle–density profiles and particle currents on the steady states under the closed boundary conditions.