## INSALATE DI MATEMATICA

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14/01/2025 FREDERICA IACOVISSI

Università degli Studi dell'Aquila Large Deviations for Rational Models and the Matrix Product Ansatz



## Abstract:

A rational model is a stochastic model for the random generation of words over a given alphabet A. This model defines a probability measure  $\mu_N$  on  $A^N$  in terms of matrices having rows and columns labeled by a finite or countable set B. By enlarging the state space, we show a natural approach to compute the large deviations rate functional for the measure  $\mu_N$ .

The invariant measures of several non equilibrium models of interacting particle systems can be represented by the so-called Matrix Product Ansatz which corresponds to a rational model with matrices labeled by B that is countable infinite. We focus on the MPA representation of the boundary-driven TASEP, and we discuss the approach for deriving a new LD rate functional for the process.

## Keywords:

large deviations rate functional  $\cdot$  Matrix Product Ansatz  $\cdot$  boundary-driven TASEP

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"Obvious" is the most dangerous word in mathematics. (Eric Temple Bell)