

# Mixing time for the asymmetric simple exclusion process in a random environment

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We consider a particle system on a segment where the particle jumps are nearest neighbors, satisfying the exclusion rule - a particle cannot jump on an already occupied site. The particle on site  $x$  has jump rates to the right and left are respectively given by  $p_x$  and  $1 - p_x$  where  $(p_x)$  is a fixed realization of a sequence of IID variables taking value in  $[0, 1]$ . In this work we study the mixing time of the system: that is the time required for the system to reach its equilibrium distribution starting from an atypical initial configuration. We show that the mixing time behaves like a power of  $N$ , and provide a "conjecturally sharp" lower bound on the exponent.