

Large deviations for a random walk in a dynamic random environment

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Abstract.

We consider a one-dimensional simple symmetric exclusion process on the integer lattice at a fixed density, constituting a dynamic random environment, together with a nearest-neighbor random walk that on occupied sites has a local drift to the right but on vacant sites has a local drift to the left. We prove a large deviation principle for the empirical speed of the random walk and we exhibit the main properties of the associated rate functions, both annealed and quenched w.r.t. the exclusion process.