QUENCHED NONEQUILIBRIUM CENTRAL LIMIT THEOREM FOR A TAGGED PARTICLE IN THE EXCLUSION PROCESS WITH BOND DISORDER

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(JOINT WORK WITH C. LANDIM)

ABSTRACT. For a sequence of i.i.d. random variables $\{\xi_x : x \in \mathbb{Z}\}$ bounded above and below by strictly positive finite constants, consider the nearest-neighbor one-dimensional simple exclusion process in which a particle at x (resp. $x + 1$) jumps to $x + 1$ (resp. x) at rate ξ_x. We examine a quenched nonequilibirum central limit theorem for the position of a tagged particle in the exclusion process with bond disorder $\{\xi_x : x \in \mathbb{Z}\}$. We prove that the position of the tagged particle converges under diffusive scaling to a Gaussian process if the other particles are initially distributed according to a Bernoulli product measure associated to a smooth profile $\rho_0 : \mathbb{R} \to [0, 1]$.

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