A Driven Tagged Particle in One-dimensional Exclusion Processes

SPEAKER: Zhe Wang, École Polytechnique Fédérale de Lausanne
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ABSTRACT
We study the long-time behavior of a driven tagged particle in a non-nearest-neighbor exclusion process in dimension one. We will discuss two scenarios when the tagged particle has a speed. In the asymmetric exclusion process, the tagged particle can have a positive speed even when its drift is negative. In the symmetric exclusion process with a removal rule, the displacement of the tagged particle satisfies a law of large numbers and a large deviation principle. Particularly, the mean and the LDP rate function can be computed explicitly. We will characterize some nontrivial invariant measures for the environment process viewed from the tagged particle. Our arguments are based on couplings and color schemes.

BIOGRAPHY
Zhe Wang is a postdoctoral researcher at École Polytechnique Fédérale de Lausanne. He obtained his Ph.D. from New York University in Spring 2018, under the advisement of S. R. Srinivasa Varadhan. His main research interests focus on interacting particle systems, and random walks in random environments.