

STATIONARY SOLUTIONS FOR 1D BURGERS EQUATIONS AND KPZ SCALING

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Abstract: In the first part, we will talk about the stationary solutions for 1D stochastic Burgers equations and their ergodic properties. We will classify all the ergodic components, establish the “one force---one solution” principle, and obtain the inviscid limit. The key objects to study are the infinite geodesics and infinite-volume polymer measures in random environments, and the ergodic results have their counterparts in the geodesic/polymer language. In the second part, we will present a random point field model that is motivated by the coalescing and monotone structure of the optimal paths in random environments that arise in many KPZ models. The $2/3$ transversal exponent from the KPZ scaling becomes a natural parameter for the renormalization action in this model, and can be potentially extended to values other than $2/3$. Some preliminary results are given.