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Stochastic processes in environment constituted by infinite system of random walks: Multiscale analysis approach

In this talk I will present a multiscale argument which was introduced and successfully used to study asymptotic behaviour of various processes, which recently attracted some attention in the literature. This includes branching random walk in catalytic media, growth and spread of an infection, and, finally the den Hollander's random walk, which evolve in a random environment constituted by the infinite system of independently moving random walks. In spite of the apparent simplicity of the dynamical random environment, is not easy to describe it jointly with the main process. I will explain key points of the method, show its strong and weak aspects, and will discuss possible applications and new directions of development.

The talk based on joint works with H. Kesten.