LARGE DEVIATIONS FOR THE EXCLUSION PROCESS WITH SLOW BOND

ADRIANA NEUMANN

We studied the asymptotic behavior of the simple exclusion process with a slow bond. While an usual bond has conductance equal to one, the slow bond has a lower conductance. The empirical measure, which characterizes the time-evolution of the spatial density of particles, converges under diffusive scaling to a weak solution of the heat equation with Robin's boundary conditions. This is known as hydrodynamic limit and corresponds to a law of large numbers for the empirical measure. Weak solutions of the equation mentioned above are called hydrodynamic profiles.

Since the empirical measure is random, there is some deviation of this convergence to the hydrodynamic profile. In other words, the empirical measure can converge to another profile, with small probability. The large deviations principle is the characterization of this probability, that is exponentially small as a function of that profile. This is a joint work with Tertuliano Franco (UFBA).

UFRGS, Instituto de Matemática, Av. Bento Gonçalves, 9500. CEP 91509-900, Porto Alegre, Brasil

E-mail address: aneumann@mat.ufrgs.br