Talk 10, 14:50–

KPZ fluctuations of the 1D asymmetric exclusion process

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The one-dimensional asymmetric simple exclusion process(ASEP) is a stochastic process of many (classical) particles which perform asymmetric random walks with hard-core exclusion interaction. This model can be formulated using the quantum spin chain language and is in fact a Bethe-ansatz-solvable model. Even some of its time dependent correlations can be computed exactly by using the connection to random matrix theory. It allows us to study the Kardar-Parisi-Zhang (KPZ) scaling behaviors in detail. This is related to the fact that a version of the ASEP is a kind of free fermion system though its "Hamiltonian" is not mapped to a free fermion by the Jordan-Wigner transformation.