Quantum integrable systems, conformal field theories and stochastic processes



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Inhomogenous Multispecies TASEP on a ring

In this talk I will present some results about a multispecies version of the TASEP, a model which describes the stochastic evolution of a system of particles of different species on a periodic oriented one dimensional lattice, where two neighboring particles exchange their positions with a rate which depends on their species. For some choice of these rates the Markov matrix turns out to be integrable and for the same choice the (unnormalized) stationary probability is conjectured to show positivity and combinatorial properties related to Schubert polynomials. I will discuss how integrabilty leads to an interesting algebraic structure underlying this problem which allows to prove some remarkable properties of the stationary measure and to give exact formulas for the stationary probability of some classes of configurations.

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