Full Name	Title	Abstract
Patrik Ferrari	Universality of the GOE Tracy-Widom distribution for TASEP with arbitrary particle density	We consider TASEP in continuous time with non-random initial conditions and arbitrary fixed density of particles rho. We show GOE Tracy-Widom universality of the one-point fluctuations of the associated height function. The result phrased in last passage percolation language is the universality for the point-to-line problem where the line has an arbitrary slope. (Joint work with Alessandra Occelli)
Craig Tracy	Blocks and Gaps in the Asymmetric Simple Exclusion Process Simple Exclusion Process: Asymptotics	IIn earlier work with Harold Widom, we obtained formulas for the probability in the asymmetric simple exclusion process (ASEP) that the mth particle from the left is at site x at time t. These formulas were expressed in general as sums of multiple integrals and, for the case of step initial condition, as an integral involving a Fredholm determinant. In the present work these results are generalized to the case where the mth particle is the left-most one in a contiguous block of L particles. The earlier work depended in a crucial way on two combinatorial identities, and the present work begins with a generalization of these identities to general L. For the KPZ regime with step initial condition, we determine the conditional probability (asymptotically as t-> ∞) that a particle is the beginning of an L-block, given that it is at site x at time t. Using duality between occupied and unoccupied sites we obtain the analogous result for a gap of G unoccupied sites between the particle at x and the next one. This is joint work with Harold Widom.
Vadim Gorin	Local limits of Random Sorting Networks	A sorting network is a shortest path between 12..n and n..21 in the Cayley graph of the symmetric group spanned by swaps of adjacent letters. We will discuss the bulk local limit of the swap process of uniformly random sorting networks and encounter universal distributions of the random matrix theory, including the celebrated Gaudin-Mehta law, which describes the energy level spacings in heavy nuclei.

Tomohiro Sasamoto	Large deviation of a tagged particle in 1D symmetric exclusion process	The one-dimensional symmetric simple exclusion process (SEP) is a simple and well-known stochastic interacting particle system in which many particles perform symmetric random walk with exclusion interaction. We study the fluctuation properties of a tracer (tagged particle) in the one-dimensional SEP for a uniform density stationary initial condition. The mean position is zero and the anomalous fluctuation of order t^(1/4) has been known for a long time. We will present an exact formula for the large deviation function of its position. Our results can be generalized to the step initial condition with different densities in both direction, and can also be translated to the large deviation of the integrated current at an arbitrary position. This is a generalization of a previous work on the current at the origin studied by Derrida and Gershenfeld, and also of another work on the single file diffusion of Brownian particles by Krapivsky, Mallick and Sadhu. Our approach uses recently developed techniques to study the one dimensional KPZ equation and asymmetric exclusion process, such as the Bethe ansatz, stochastic duality and nested contour formula for the deformed moments. Reference: T. Imamura, K. Mallick, T. Sasamoto, Large deviations of a tracer in the symmetric exclusion process, Phys. Rev. Lett. 118, 160601 (2017).
Dan Betea	Boxes, dominoes, pyramids and Plancherel with free boundaries and in finite temperature	We will survey the notion of Schur process, from the origins to present. We will compute its correlations under various boundary conditions: empty, free, and periodic. Focus will be on applications: shapes and fluctuations of large pyramid partitions, and of various symmetric tilings and last passage percolation models. The analysis of symmetries comes from a new Wick lemma for two free boundaries. We also briefly discuss a finite temperature Plancherel model coming from a simple Schur measure with periodic boundary conditions. Correlations are governed by the finite temperature discrete Bessel kernel which scales, in the edge limit, to the finite temperature Airy kernel. Gap probabilities then scale to a finite temperature version of the Tracy--Widom distribution. If time permits, we discuss various bivariate bilateral basic hypergeometric identities we get as byproducts. The talk is based on joint work with Cedric Boutillier, Jeremie Bouttier, Peter Nejjar, and Mirjana Vuletic.

Alexander Bufetov	CONDITIONAL MEASURES OF DETERMINANTAL POINT PROCESSES: THE GIBBS PROPERTY AND THE COMPLETENESS OF REPRODUCING KERNELS.	Alexander I. Bufetov (CNRS, Steklov, IITP) Consider a Gaussian Analytic Function on the disk. In joint work with Yanqi Qiu and Alexander Shamov, we show that, almost surely, there does not a square-integrable holomorphic function with the same zeros. By the Peres and Virag Theorem, zeros of a Gaussian Analytic Function on the disk are a determinantal point process governed by the Bergman kernel, and we prove, for general determinantal point processes, that reproducing kernels sampled along a trajectory form a complete system in the ambient Hilbert space. The key step in our proof is that the determinantal property is preserved under conditioning. The problem of The talk will first address this question for specific examples such as the sine-process, where one can explicitly write the analogue of the Gibbs condition in our situation. We will then consider the general case, where, in joint work with Yanqi Qiu and Alexander Shamov, proof is given of the Lyons-Peres conjecture on completeness of random kernels. The talk is based on the preprint arXiv:1605.01400 as well as on the preprint arXiv:1612.06751 joint with Yanqi Qiu and Alexander Shamov.
Evgeny Dimitrov	The ASEP and Hall-Littlewood Gibbsian line ensembles	Abstract: We consider the ASEP started from step initial condition and investigate the large time T distribution of the height function. Conjecturally, under $T^{2/3}$ spatial and $T^{1/3}$ fluctuation scaling (also known as KPZ scaling) the asymptotic behavior is described by the Airy$_2$ process. We provide further evidence for this conjecture by showing that under the KPZ scaling the height function is tight in the space of continuous curves. In the first part of the talk we will discuss the connection between the ASEP and the ascending Hall-Littlewood process, which was recently discovered by Borodin-Bufetov-Wheeler. The second part of the talk explains how to realize ASEP as the top curve of a line ensemble with a Gibbsian resampling property and how one point-tightness of the top curve can be propagated to the tightness of the entire curve. This is based on joint work with Ivan Corwin.

Victor Dotsenko	Two-temperature statistics of free energies in (1+1) directed polymers	The joint statistical properties of two free energies computed at two different temperatures in the same sample of (1+1) directed polymers is studied in terms of the replica technique. The scaling dependence of the free energies difference on the two temperatures T_{1} and T_{2} is derived. In particular, it is shown that if these two temperatures are close to each other the typical value of the fluctuating part of the free energies difference is proportional to |1 - T_{1}/T_{2}|^{1/3}. It is also shown that the left tail asymptotic of this free energy difference probability distribution function coincides with the corresponding tail of the TW distribution.
Caley Finn	Matrix product solution of a left-permeable two-species asymmetric exclusion process	We study a two-species partially asymmetric exclusion process where the left boundary is permeable for the ëslowerí species but the right boundary is not. We find a matrix product solution for the stationary state, and the exact stationary phase diagram for the densities and currents. Our analysis relies on the connection to certain q-orthogonal polynomials. We also establish a connection to the symmetric Koornwinder polynomials, which allows us to compute further properties of the stationary state.
Alexandr Garbali	Higher rank algebras and symmetric polynomials	
Atsuo Kuniba	Matrix product stationary states and tetrahedron equations	
Masato Okado	Generalized quantum groups and fusion procedure	In arXiv:1503.08536 generalized quantum groups are defined. In type A it is isomorphic to the quantized superalgebra $U_q(sl(M\|N))$ as algebra, but it is not as Hopf algebra. Starting from fundamental representations, one can construct new ones by applying so called fusion procedure. We discuss the existence of crystal bases for such representations. This is a joint work in progress with Jae-Hoon Kwon.
Leonid Petrov	1. Cauchy identities and their randomization	Cauchy type summation identities for symmetric polynomials (such as the Schur polynomials) are ubiquitous in bringing exact solvability to various KPZ stochastic systems such as TASEP (with step initial condition; equivalently, corner growth with exponential weights) and its various generalizations: ASEP, q-TASEP, directed random polymers, stochastic vertex models. For the latter types of models, Borodin (2014) derived Cauchy summation identities directly from the Yang-Baxter equation for the U_q(sl_2) R matrix (corresponding to the higher spin six vertex model). I will discuss a "bijective" point of view on the Yang-Baxter equation and Cauchy identities which produces integrable particle systems living in three space dimensions and depending on many tunable parameters.

Leonid Petrov	2. Particle systems in inhomogeneous space	I will discuss several stochastic interacting particle systems evolving in one-dimensional inhomogeneous space. The inhomogeneity means that the speed of a particle depends on its location. I will focus on integrable examples of such systems, i.e., for which certain observables can be written in exact form suitable for asymptotic analysis. Examples include a continuous-space version of TASEP, and the pushTASEP (=long-range TASEP). For integrable systems, limit shapes can be described in an explicit way. We also obtain asymptotics of fluctuations, in particular, around infinite traffic jams caused by slowdowns.
Matthieu Vanicat	Matrix product construction for Koornwinder polynomials and fluctuations of the current in the open ASEP	Starting from the deformed current-counting transition matrix for the open boundary ASEP, we prove that with a further deformation, the symmetric Koornwinder polynomials for partitions with equal row lengths appear as the normalisation of the twice deformed ground state. We give a matrix product construction for this ground state and the corresponding symmetric Koornwinder polynomials. Based on the form of this construction and numerical evidence, we conjecture a relation between the generating function of the cumulants of the current, and a certain limit of the symmetric Koornwinder polynomials.
Mirjana Vuletić	Applications of free boundary Schur processes	In this talk I will introduce the Schur process with two free boundaries. This is a generalization of the original Schur process of Okounkov and Reshetikhin. I will discuss our results on the asymptotics of symmetric last passage percolation models, symmetric plane partitions and plane overpartitions. This is a joint work with D. Betea, J. Bouttier and P. Nejjar.
Paul Pearce	Dimers on the strip	
Chihiro Matsui	Quasilocal charges of the XXZ spin chain and integrability of the boundary-driven diffusive system	Quasilocal charges of integrable systems have attracted attention in the context of generalized Gibbs ensemble (GGE) and ballistic transport of the spin current supported by non-zero Drude weight. We discuss the construction of quasilocal charges for the XXZ spin chain in the presence of boundary magnetic fields and how the boundary magnetic fields affect on the evaluation of Drude weight. On the other hand, the generating function of the quasilocal charges is known to as a steady state of the boundary-driven diffusive system. The boundary terms are partly recovered by transforming dissipators by keeping the Liouvillian operator invariant. We show how the Lindblad-type diffusive XXZ spin chain is solved for these cases.

Matteo Mucciconi	Stationary KPZ fluctuations for the stochastic higher spin vertex model	The Higher Spin Vertex Model is an inhomogeneous integrable system introduced in [CP] and [BP] as a generalization of numerous other exactly solvable models which have been widely studied in the last two decades. Among these we have simple exclusion processes, such as TASEP or ASEP, vertex models, as the celebrated six vertex model, and zero range processes. The core of the integrability of this model lies in the fact that its R-matrix is chosen to be a general solution of the Yang-Baxter equation. This naturally endowes the system with a solid algebraic structure, that ultimately leads to exact formulas for statistics of remarkable observables, as the current of particles (or height function). In a joint work with Imamura T. and Sasamoto T. we characterize and study a stationary state of this vertex model and determine the exact law for fluctuations of the long time asymptotics of current through a vertex. Using elliptic determinants techniques, developed in [IS] we are able to find the Baik Rains distribution, which describes the height fluctuations of the stationary state of models in the KPZ universality class. References: [CP] Corwin I., Petrov L.; Stochastic Higher Spin Vertex Model on the Line, Communications in Mathematical Physics (2016) [BP] Borodin A., Petrov L.; Higher spin six vertex model and symmetric rational functions, Selecta Mathematica (2017) [IS] Imamura T., Sasamoto T.; Fluctuations for stationary q-TASEP, arXiv:1701.05991v2 (2017)
Iori Hiki	The current fluctuation and spatial correlation in the LeRoux lattice gas with periodic initial conditions	In the study of non-equilibrium systems, the KPZ universality class has been studied extensively in physics and mathematics and verified in experiments. Recently, van Beijeren and Spohn conjectured that the KPZ scaling function for the stationary two-point function may be found also in multicomponent systems such as the LeRoux lattice gas and anharmonic chains. Here, the LeRoux lattice gas is two-components stochastic model and anharmonic chains is three-components classical system. This has been confirmed in several numerical simulations. Furthermore, in the simulations with step initial conditions, it has been shown that the current fluctuation of the “normal modes” has the size of O(t^{1/3}) and obey the GUE Tracy-Widom distribution. Based on this result, we attempted to observe the current fluctuation and spatial correlation in the LeRoux lattice gas with periodic initial conditions. We have performed numerical simulations and observed the GOE Tracy-Widom distribution and the covariance of the Airy_1 process. Also, we will talk about similar results in anharmonic chains.