Speaker	Talk Title	Abstract
A. Knutson	Schubert calculus and integrability I: equivariant localization calculations	I'll present the basics of equivariant cohomology and equivariant K-theory, and then apply this to compute the Schubert bases of cohomology of flag manifolds -- the Andersen-Jantzen-oergel/Billey/Graham/Willems formulae. I'll give a geometric derivation of these formulae, using subword complexes. In the case of d-step flag manifolds (in type A), I'll relate this formula to the R-matrix for the standard representation of A_d.
A. Knutson	Schubert calculus and integrability II: puzzles	Schubert calculus is the study of the multiplication in the Schubert basis. While it is in principle solvable from the AJS/B/G/W formulae, this approach doesn't let one see positivity properties the answer is known to have. In the case of d-step flag manifolds for d up to 3, I'll explain how to compute these coefficients positively using the R-matrices for minuscule representations of A_2, D_4, E_6 respectively, and to encode the computation using "puzzles".
A. Okounkov	Geometric representation theory and quantum integrable systems	Geometric realization of quantum groups and the enumerative interpretation of quantum integrable systems provide interesting new tool for the analysis of very classical problems. I will start by explaining how to find Bethe eigenvectors from this perspective. If time permits, I will talk about elliptic generalizations.
Gus Schrader	Braiding for principal series via geometric R-matrices	I will report on recent joint work with Alexander Shapiro in which we construct the braiding operator for principal series representations of the split real quantum group of type A_n using geometric R-matrices arising from quantum Teichmuller theory. Our approach uses the tools of quantum cluster algebras and quantum total positivity, with a certain special function called the modular quantum dilogarithm playing the central role.
Ole Warnaar	Symmetric plane partitions and Gelfand pairs	In this talk I will describe how Gelfand pairs may be used to compute the generating functions for various classes of symmetric plane partitions.
Vassily Gorbounov	Some structures of the 5 vertex model	In the talk we will describe some interesting properties of the 5 vertex model obtained from the 6 vertex model as a certain limit. In particular we concentrate on the cluster algebra structure on the algebra of operators of the 5 vertex model.

Rick Kenyon	Limit shapes beyond the complex burgers equation	We discuss the "5 vertex model", a model of random discrete interfaces generalizing the dimer model (and a special case of the six-vertex model). Limit shapes in the model are solutions of a PDE generalizing the complex Burgers equation. We show that solutions to this equation can be explicitly parameterized with analytic functions. This is joint work with Jan de Gier and Sam Watson
Alisa Knizel	Fluctuations of the limit shape for q-boxed plane partitions via loop equations	We analyze the asymptotic behavior of a q-boxed plane partition model introduced by Borodin, Gorin and Rains. In particular, we show that the global fluctuations of the height function on a fixed slice are described by a one-dimensional section of a pullback of the two-dimensional Gaussian free field. Our approach is based on a q-analogue of the Schwinger-Dyson (or loop) equations, which originate in the work of Nekrasov and his collaborators, and extends the methods developed by Borodin, Gorin and Guionnet to a quadratic lattice.
Yaping Yang	How to sheafify an elliptic quantum group?	I will talk about the sheafification of an elliptic quantum group of any symmetric Kac-Moody Lie algebra. It is naturally obtained from the elliptic cohomological Hall algebra of a preprojective algebra. The sheafified elliptic quantum group is an algebra object in a certain monoidal category of coherent sheaves on the colored Hilbert scheme of points on an elliptic curve. By taking certain rational sections, it recovers the dynamical elliptic quantum group studied by Felder and Gautam-Toledano Laredo. By construction, the elliptic quantum group naturally acts on the equivariant elliptic cohomology of Nakajima quiver varieties. This action is compatible with the action induced by Hecke correspondence, a construction similar to that of Nakajima. I will also explain the relation between the sheafified elliptic quantum group and a global affine Grassmannian over an elliptic curve. This talk is based on my joint work with Gufang Zhao.

Gleb Koshevoy	Geometric Robinson-Schensted-Knuth correspondences and canonical bases	We define a geometric RSK correspondence for a semisimple group and a reduced decompositon of an element of its Weyl group. This correspondence is a biration map of tori of dimension equal to the length of a reduced decomposition of the element. This RSK corespondence transforms superpotentials for the corresponding geometric crystals. For the longest element of the Weyl group, the tropicalization of this map turns out to be the crystal isomorphism between the Lusztig crystal on the canonical basis and the Kashiwara crystal on the dual canonical basis for the Langands dual group. For the case G=SL_{n+m} and the grassmannian permutation w_{n,m}, the tropicalization of the geometric RSK turns out to be the crystal bijection between the canonical basis parametrization of irrep of multiple the fundamental q\omega_n and the dual canonical basis parametrization of q\omega_m. In such a case, the troicalization of geometric RSK coincides with a modification of usual RSK being a bijection between non-negative $n\times m$ arrays and pairs of semistandard Young tableaux of equal shape (the modification means that we get a pair (P^{Sch}, Q) for an array, where P^{Sch} denotes the tableaux being the Schutzenberger involution to P, while usual RSK send an array to the pair (P,Q)). In this case, the geometric RSK, transforms the Berenstein-Kazdan potential to the superpotential due to Rietsch-Williams.
Olya Mandelshtam	Combinatorics of the 2-ASEP on a ring	The two-species asymmetric simple exclusion process (2-ASEP) on a ring is a Markov chain on $\mathbb{Z}/n\mathbb{Z}$ with each site either vacant or occupied by one of two classes of particles, and whose dynamics are dictated by parameter q: particles can hop right at rate 1 or left at rate q. We describe certain cylindric tableaux which give a combinatorial interpretation for the stationary probabilities of states of the 2-ASEP on a ring, as an extension of a similar result for the 2-ASEP with open boundaries. Our solution furthermore gives a combinatorial formula for certain non-symmetric Macdonald polynomials and proves a positivity conjecture in some special cases. This talk is based on ongoing work with Sylvie Corteel and Lauren Williams.

Greta Panova	Skew SYTs -- combinatorics, asymptotics and lozenge tilings	The celebrated hook-length formula of Frame, Robinson and Thrall from 1954 gives a product formula for the number of standard Young tableaux of straight shape. No such product formula exists for skew shapes. In 2014, Naruse announced a formula for skew shapes as a positive sum of products of hook-lengths using "excited diagrams" [Ikeda-Naruse, Kreiman, Knutson-Miller-Yong] coming from Schubert calculus. We now have combinatorial and aglebraic proofs of this formula, leading to a bijection between SSYTs or reverse plane partitions of skew shape and certain integer arrays that gives two q-analogues of the formula. These formulas can be proven via non-intersecting lattice paths interpretations, for example connecting Dyck paths and alternating permutations. In this talk, we will show how excited diagrams give asymptotic results for the number of skew Standard Young Tableaux in various regimes of convergence for both partitions. We will also show a multivariate versions of the hook formula with consequences to exact product formulas for certain skew SYTs and lozenge tilings with multivariate weights, which also appear to have interesting behavior in the limit. Joint work with A. Morales and I. Pak.
Hitoshi Konno	Elliptic weight functions and finite-dimensional representation of elliptic quantum group	We construct a finite-dimensional representation of the elliptic quantum group U_{q,p}(\widehat{sl}_N) on the Gelfand-Tsetlin basis. The result is described in a combinatorial way in terms of the partitions of [1,n], and gives an elliptic and dynamical analogue of the geometric representation of the quantum affine algebra U_q(\widehat{sl}_N) on equivariant K-theory constructed by Ginzburg-Vasserot and Nakajima. Identifying the elliptic weight functions with the elliptic stable envelopes proposed by Aganagic-Okounkov, we discuss a possible geometric interpretation of our result as a representation of U_{q,p}(\widehat{sl}_N) on equivariant elliptic cohomology.